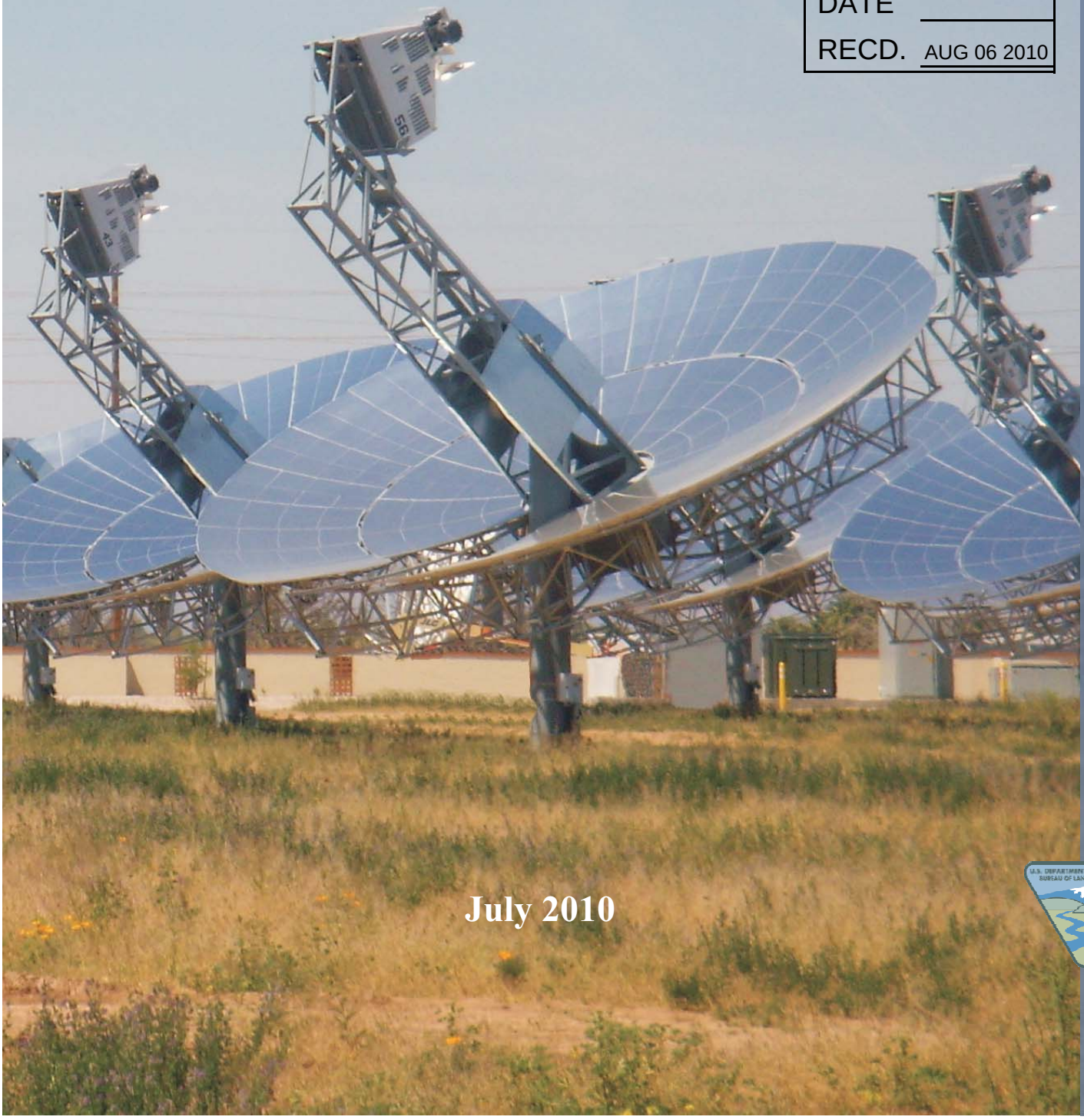
BLM

El Centro Field Office

Final Environmental Impact Statement
Imperial Valley Solar Project

VOLUME 1 OF 2



July 2010

DOI Control No. FES 10-29

United States Department of the Interior
Bureau of Land Management

Final Environmental Impact Statement

Imperial Valley Solar Project

For the

El Centro Field Office
El Centro, California

July 2010

Margaret L. Goodro
Field Manager

July 2010
Date

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
El Centro Field Office
1661 South 4th Street
El Centro, CA 92243-4561

In reply refer to: 1610-5.G.1.4

July 28, 2010

Dear Reader:

Enclosed is the Proposed Resource Management Plan-Amendment/Final Environmental Impact Statement (PRMP-A/FEIS) for the California Desert Conservation Area Plan and Imperial Valley Solar Project. The Bureau of Land Management (BLM) prepared this PRMP-A/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 adds the Imperial Valley Solar Project site to those sites identified in the California Desert Conservation Area Plan, as amended, for solar energy production. The decision on the Imperial Valley Solar Project will be to approve, approve with modification, or deny issuance of the right-of-way grant applied for by Imperial Valley Solar, LLC.

This PRMP-A/FEIS for the Imperial Valley Solar Project has been developed in accordance with NEPA and the Federal Land Policy and Management Act of 1976. The PRMP-A is largely based on the Proposed Action Alternative, the preferred alternative, in the Draft Resource Management Plan-Amendment/Draft Environmental Impact Statement (DRMP-A/DEIS), which was released by the Environmental Protection Agency (EPA) on February 22, 2010 in the Notice of Availability (NOA) published in the *Federal Register* (see 75 FR 7624). The PRMP-A/FEIS for the Imperial Valley Solar Project 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 the written and oral comments received during the public review period for the DRMP-A/DEIS and responses to comments.

The BLM will be accepting additional public comment on the PRMP-A/FEIS within 30 days after the EPA publishes the NOA in the *Federal Register*. Comments can be sent to Jim Stobaugh, National Project Manager, by mail: Bureau of Land Management, P.O. Box 12000, Reno, NV 89520-0006; or 1340 Financial Blvd, Reno, NV 89502; or email: caivspp@blm.gov. All substantive comments will be reviewed and responded to in the Record of Decision.

Pursuant to the BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the planning process for the PRMP-A and has an interest that is or may be adversely affected by the planning decision may protest the planning decision within 30 days from the date the EPA publishes the Notice of Availability in the *Federal Register.* Unlike the planning decision, issuance of the proposed right-of-way grant is an implementation decision that is not subject to protest under the BLM planning regulations.

For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (labeled as 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).

Protests must be in writing and mailed to the following address:

Regular Mail:	Overnight Mail:
Director (210)	Director (210)
Attention: Brenda Williams	Attention: Brenda Williams
P.O. Box 66538	1620 L Street, N.W., Suite 1075
Washington, D.C. 20035	Washington, D.C. 20036

Before including your address, phone number, e-mail address, or other personal identifying information in your protest, be advised that your entire protest – including your personal identifying information – may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, 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, a Record of Decision (ROD) may be issued adopting the Approved RMP-A and making a decision regarding issuance of the right-of-way grant. 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.

Sincerely,

Margaret Goodro
Manager, El Centro Field Office

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:

This Final Environmental Impact Statement is provided in two volumes. The contents of these volumes are:

- Volume 1 – Signature page through Chapter 11, Glossary; and
- Volume 2 – Appendix A, Figures, through Appendix I, Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative.

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El Centro Field Office
Imperial Valley Solar Project
Final Environmental Impact Statement

Lead Agency: Bureau of Land Management (BLM)
El Centro Field Office
El Centro, California

For further information, contact: Jim Stobaugh
National Project Manager
BLM Nevada State Office

Abstract

This Final Environmental Impact Statement (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 and operation of a solar electricity generation facility. The Agency Preferred Alternative covers approximately 6,144 acres (ac), managed by the BLM, and would generate 709 megawatts (MW) of electricity annually. The FEIS identifies impacts of the Agency Preferred Alternative, including impacts related to biological resources, cultural resources, land use, visual resources, and 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 FEIS.

Chapter 2.0 discusses the IVS project (750 MW on approximately 6,500 ac), the 709 MW Alternative (the Agency Preferred Alternative), the 300 MW Alternative (300 MW on approximately 2,600 ac), the Drainage Avoidance Alternative #1 (632 MW on approximately 4,690 ac), the Drainage Avoidance Alternative #2 (423 MW on approximately 3,153 ac), the No Action Alternative (No ROW Grant and No CDCA Plan Amendment), the No Action Alternative (No ROW Grant and Amend the CDCA Plan for No Solar), and the No Action 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 Build and No Action Alternatives, including the Agency Preferred Alternative.

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

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Executive Summary

Background and Organization of the Final Environmental Impact Statement

Background on the Environmental Process

In August 2007, the California Energy Commission (CEC) and the United States Bureau of Land Management (BLM) California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. Consistent with that MOU, the CEC and the BLM prepared a joint environmental compliance document to address the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for the Imperial Valley Solar (IVS) project. Specifically, a Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was prepared and was circulated for agency and public review and comment between February 12, 2010 and May 28, 2010. The SA/DEIS is incorporated by reference in this Final Environmental Impact Statement (FEIS). The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the SA/DEIS.

The BLM and the CEC prepared separate final documents for compliance with NEPA and CEQA, respectively. Specifically, the BLM prepared this FEIS for the 750 MW Alternative (IVS project). The SA/DEIS was the primary reference used in preparing this FEIS. The SA/DEIS is incorporated by reference in this FEIS. The comments received on the DEIS are addressed in this FEIS. After the publication of this FEIS, the BLM will prepare a Record of Decision (ROD) regarding the 709 MW Alternative (Agency Preferred Alternative). The publication of the ROD in the Federal Register is the final step required of the BLM to meet the requirements of NEPA for the IVS project.

Project Description

The IVS project is a privately proposed solar power farm that would be located on approximately 6,500 acres (ac) of vacant land in southwestern Imperial County, California, south of Evan Hewes Highway and north of Interstate 8 (I-8). The IVS project site includes about 6,140 ac of Federal land managed by the BLM and approximately 360 ac of privately owned land. The site is about 100 miles (mi) east of San Diego, 14 mi west of El Centro, approximately 4 mi east of Ocotillo Wells, and south of a gypsum processing site known as Plaster City.

The IVS project would be a primary power generating facility constructed in two phases. Phase I would include the construction and operation of a 300-megawatt (MW) facility and Phase II would include the construction and operation of facilities to generate an additional 450 MW. Power would be generated by up to 30,000 SunCatcher solar dish collectors

Organization of the Final Environmental Impact Statement

This FEIS provides detailed descriptions of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the three No Action Alternatives evaluated in detail in the SA/DEIS and the FEIS. The FEIS describes the existing environmental setting and the potential impacts of the evaluated Alternatives. Mitigation measures for adverse impacts are provided. Section 1.5, Guide to the Final EIS, provides a detailed description of the organization and content of this FEIS.

Lead Agencies' Roles and Responsibilities

The CEC has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants in California which generate 50 or more MW. The CEC certification is in lieu of any permit required by State, regional, or local agencies. The CEC must review power plant Applications for Certification (AFCs) to assess potential environmental impacts and compliance with applicable laws, ordinances, regulations, and standards (LORS). The CEC analyses regarding the IVS project in the SA/DEIS were prepared in accordance with the requirements of CEQA.

The BLM's authority for the proposed action includes the Federal Land Policy and Management Act (FLPMA) of 1976, Section 211 of the Energy Policy Act, and BLM's Solar Energy Development Policy. The FLPMA authorizes the BLM to issue right-of-way (ROW) grants for renewable energy projects. BLM's authority also extends to the BLM lands in the California Desert District, which are governed by the *California Desert Conservation Area Plan* (CDCA Plan, 1980, as amended). Because the CDCA Plan would need to be amended to allow the IVS project on the project site, BLM would also oversee that CDCA Plan amendment process for the project.

Section 404 of the Federal Clean Water Act (CWA) authorizes the Secretary of the Army, acting through the United States Army Corps of Engineers (Corps), to issue permits regulating the discharge of dredged or fill material into the waters of the United States (waters of the U.S.). The Corps has the authority to regulate such discharges on the project site.

Purpose and Need

Bureau of Land Management Purpose of and Need for the Proposed Action

The BLM's purpose and need for the IVS project is to respond to Imperial Valley Solar, LLC's (now Tessera Solar, LLC) application under Title V of FLPMA for a ROW grant to construct, operate, maintain, and decommission a solar energy generation facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant for the IVS project. BLM's actions will also include consideration of amending the CDCA Plan to allow for solar power generation on the project site. If the BLM decides to approve the issuance of a ROW grant for the IVS project, it must first amend the CDCA Plan to allow for that solar use on the site. Section 1.2.1, Bureau of Land Management Purpose of and Need for the Proposed Action, provides additional discussion regarding the BLM purpose and need for the proposed action.

United States Army Corps of Engineers Purpose of and Need for the Proposed Action

The CWA Section 404(b)(1) Guidelines (Guidelines) promulgated by the United States Environmental Protection Agency (EPA) explain that, when an action is subject to NEPA and the Corps is the permitting agency, the analysis of alternatives prepared for NEPA will in most cases provide the information needed for analysis under the Guidelines. The Guidelines also state that, in some cases, the NEPA document may have addressed "…a broader range of alternatives than required to be considered under [the Guidelines] or may not have considered alternatives in sufficient detail to respond to the details of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information." (40 CFR 230.10(a)(4)). In light of this statement in the Guidelines, and because the project purpose statements under NEPA and the Guidelines are not necessarily identical, the Corps has reviewed and refined the project purpose to ensure it meets the standards of the Guidelines.

For CWA Section 404 purposes, the Corps' *Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* (Ecosphere Environmental Consulting, July 13, 2010) provided in Appendix H provides the following statement of basis and overall project purpose:

> "The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed action, and is used by the Corps to determine whether

an applicant's project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site).

"The basic project purpose for the proposed action is "Energy Production." Although the basic project purpose is not water dependent, the project will not affect any special aquatic sites. Therefore, the rebuttal presumptions that there are less damaging alternatives for the proposed activity that would not affect special aquatic sites does not apply (40 CFR 230.10(a)(3)).

"The overall project purpose serves as the basis for the Corps Section 404B-1 Alternatives Analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals for the project, and which allows a reasonable range of alternatives.

"The Corps' overall project purpose is 'To provide a solar energy facility ranging in size from 300 MW to 650 MW in Imperial County, California.'"

The Corps is a cooperating agency with the BLM on the FEIS.

Department of Energy Purpose and Need

The Energy Policy Act of 2005 established a Federal loan guarantee program for eligible energy projects that employs innovative technologies. Title XVII of the Energy Policy Act 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 purposes of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for action by the Department of Energy (DOE) is to comply with its mandate under the Energy Policy Act by selecting eligible projects that meet the goals of that Act.

The DOE is a cooperating agency with the BLM on the FEIS.

Proposed Action and Alternatives to the Proposed Action

Table ES-1 summarizes the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives evaluated in this FEIS. The IVS project is the originally proposed action. All these Alternatives are described in detail in Chapter 2, Alternatives Including the Proposed Action. Table ES-1 also indicates which of these Alternatives would meet the BLM purpose and need for the project.

Table ES-1 Summary of Alternatives Evaluated in Detail in the FEIS

Alternative	Comments
IVS Project: 750 MW Alternative 750 MW 6,500 ac (6,144 ac BLM and 332 ac privately owned) 30,000 SunCatchers	This is the IVS project and was the original proposed action. This Alternative meets the BLM project purpose and need.
709 MW Alternative: Agency Preferred Alternative 709 MW 6,500 ac (6,144 ac BLM and 332 ac privately owned) 28,360 SunCatchers	This is the BLM Agency Preferred Alternative; it is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) as described by the Corps in the *Draft 404B-1 Alternatives Analysis*, which is provided in Appendix H. This Alternative meets the BLM project purpose and need.
300 MW Alternative 300 MW (40% of the MW of the IVS project) 2,600 ac (40% of the acreage of the IVS project) 12,000 SunCatchers (40% of the IVS project)	This is a reduced project using the same SunCatcher technology as the IVS project. This Alternative meets the BLM project purpose and need.
Drainage Avoidance #1 Alternative 632 MW (83% of the MW of the IVS project) 4,690 ac (72% of the acreage of the Proposed Action) 25,000 SunCatchers (83% of the IVS project)	This is a reduced project using the same SunCatcher technology as the IVS project. This Alternative was developed in consultation with the Corps to avoid drainages on the project site. This Alternative meets the BLM project purpose and need.
Drainage Avoidance #2 Alternative 423 MW (56% of the MW of the IVS project) 3,153 ac (49% of the acreage of the Proposed Action) 10,240 SunCatchers (42% of the IVS project)	This is a reduced project using the same SunCatcher technology as the IVS project. This Alternative was developed in consultation with the Corps to avoid drainages on the project site. This Alternative meets the BLM project purpose and need.

Alternative	Comments
No Action Alternative: No ROW Grant and No CDCA Plan Amendment BLM does not approve the ROW Grant for the IVS project BLM does not amend the CDCA Plan	This No Action Alternative was evaluated in the SA/DEIS under both CEQA and NEPA.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar BLM does not approve the ROW grant for the IVS project BLM amends the CDCA Plan to make the project site unavailable for future solar development	This No Action Alternative was evaluated in the SA/DEIS under NEPA only. This is not a typical No Action Alternative because the BLM would take action to amend the CDCA Plan under this Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site unavailable for further solar development.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar BLM does not approve the ROW grant for the IVS project BLM amends the CDCA Plan to make the project site available for future solar development	This No Action Alternative was evaluated in the SA/DEIS under NEPA only. This is not a typical No Action Alternative because the BLM would take action to amend the CDCA Plan under this Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site available for further solar development.

Table Source: LSA Associates, Inc. (2010).

Table Key: ac = acres; Corps = United States Army Corps of Engineers; BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; CEQA = California Environmental Quality Act; IVS = Imperial Valley Solar; MW = megawatts; NEPA = National Environmental Policy Act; ROW = right-of-way; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement.

The following modifications are proposed to the IVS project and the other Build Alternatives:

- **Transmission Line Alignment Modifications:** The applicant proposed modifications to the original transmission line alignment that were minor shifts in two segments of the line.

- **Waterline Alignment Modifications:** The waterline alignment was realigned slightly by the applicant to follow the Evan Hewes Highway ROW where feasible.

- **Hydrogen Storage Modifications:** The hydrogen gas supply, storage, and distribution system was modified by the applicant to increase the amount of hydrogen stored on site for each SunCatcher.

- **Alternative Water Supply Modifications:** An alternative water supply for construction and initial operations using water provided through the Dan Boyer Water Company in Ocotillo was identified by the applicant.

Additional details on these modifications are provided in Chapter 2.

After the release of the SA/DEIS for public review in February 2010, the BLM and Corps continued to coordinate and consult regarding possible refinements to avoid specific drainages on the IVS project site. The following modifications to the IVS project, to reduce effects to aquatic resources, the flat tailed horned lizard (FTHL), and cultural resources, were identified in that continued consultation:

- Relocating the Main Services Complex out of some of the primary wash segments of Drainage E

- Removing all SunCatchers within 100 ft of the centerline of Drainage E to provide a 200-ft wide corridor along this drainage through the site

As a result of these modifications to the IVS project, the following specific changes were made to that Alternative, which resulted in a 709 MW Alternative, which has been identified by the BLM as the Agency Preferred Alternative:

- Reduction in the total number of SunCatchers from 30,000 to 28,360 SunCatchers

- Reduction in the amount of energy generated from 750 MW to 709 MW

The 709 MW Alternative would be on the same approximately 6,500 ac as the IVS project, except that specific areas within the site, particularly along Drainage E, would be avoided and no project construction or structures would occur in those areas.

The Agency Preferred Alternative would require the following BLM actions:

- Compliance with the requirements of NEPA

- Amendment of the CDCA Plan to reflect the use of the site for solar energy generation

- Approval of a ROW grant for the approximately 6,144 ac of land under BLM jurisdiction

The Agency Preferred Alternative is also the preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) as described by the Corps in the *Draft 404B-1 Alternatives Analysis*, which is provided in Appendix H. The Corps participated in the development of this alternative and is currently in the process of a detailed evaluation of the analysis along with the EPA. A Final 404(b)(1) Alternatives Analysis and LEDPA determination will be included as part of the Corps' Record of Decision (ROD).

Connected and Cumulative Actions

There are no other actions that are connected to the IVS project that would require any action from the BLM.

There are a large number of renewable energy and other projects proposed throughout the California desert that were identified as potentially contributing to cumulative environmental impacts. Those cumulative projects are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

Summary of the Affected Environment

The site proposed for the IVS project is approximately 6,140 ac of public land administered by the BLM, and approximately 360 ac of private land under the jurisdiction of Imperial County. The northern boundary of the IVS project site is adjacent to Imperial County Route S80 (Route S80) and Plaster City, and the southern boundary is adjacent to I 8. The part of the site within the jurisdiction of the BLM is subject to the applicable land use management requirements in the CDCA Plan.

The IVS project site is in the south central part of the Imperial Valley region of the Salton Trough, a topographic and structural depression in the Colorado Desert physiographic province in southern California. Tectonically, the Salton Trough appears to lie on the boundary between the western edge of the North American Plate and the eastern edge of the Pacific Plate, with relative plate motion being transferred to the regional San Andreas Fault system via at least three more localized fault zones. The Colorado Desert province is characterized by broad alluvium-filled valleys and plains and is bounded to the west by the northwest trending granitic mountains of the Peninsular Ranges physiographic province and on the east by the south part of the Mojave Desert physiographic province.

The project site contains a variety of vegetation types including Sonoran creosote bush scrub, desert saltbush scrub, arrowweed scrub, tamarisk scrub, agricultural areas, disturbed areas, developed areas, ornamental areas, and open channel areas. Several ephemeral desert washes traverse the project site and convey flows during and following a substantial rainfall. The vegetation community in the washes is classified as Sonoran creosote bush scrub and also contains sparse stands of mesquite and tamarisk. The ephemeral washes generally contain a greater vegetative diversity and density than the creosote bush scrub habitat outside the washes. A variety of wildlife occupies the habitats on and in the vicinity of the project site.

Environmental Consequences of the Proposed Action Including Cumulative

Tables ES-2 through ES-17 summarize the environmental impacts that would occur as a result of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives by environmental parameter. (Tables ES-2 through ES-17 are provided following the last page of text in this Executive Summary.) The tables also identify the mitigation measures, project features, and other measures included in the Alternatives to avoid or substantially reduce the adverse impacts of those Alternatives. The unavoidable adverse impacts that would remain after mitigation are also summarized briefly in these tables.

Areas of Controversy

Based on input received from agencies, organizations, Native Americans and Tribal Governments, and members of the general public during the scoping for the SA/DEIS and in comments on the SA/DEIS, several areas of controversy related to the IVS project are:

- Opposition to the placement of a large solar project on essentially undisturbed desert land
- Opposition to the overall number of renewable energy projects in the western United States
- Support for locating renewable energy projects in developed areas
- Concern regarding the impacts of this large project on biological and cultural resources
- Concern regarding the range of alternatives considered

Issues to be Resolved

Extensive verbal and written comments were received during the scoping process for the IVS project. The scoping process and public input received during that process are provided in detail in Appendix C, Scoping Report. The issues raised during scoping are summarized in Table ES-18, which appears at the end of this Executive Summary.

Comparison of Alternatives/Impact Summary Table

Tables ES-2 through ES-17, which were described earlier, also allow for comparison of the impacts among all the Alternatives.

Public Participation

Scoping activities were conducted by the BLM in compliance with the requirements of NEPA for the IVS project. Many of these scoping activities were conducted jointly with the CEC. The BLM's scoping activities are described in detail in the *Final Scoping Report Stirling Energy Systems Solar Two Project* (LSA Associates, Inc. September 2009), which is provided in Appendix C, Scoping Report. The scoping report documents the Notice of Intent, the scoping meetings, workshops, and the comments received during scoping.

Summary of Comments Received on the Staff Assessment/Draft Environmental Impact Statement

The SA/DEIS was circulated for public review between February 12, 2010 and May 27, 2010. The Notice of Availability (NOA) of the SA/DEIS was published in the Federal Register on February 22, 2010. Appendix D, Public Comments on the Draft Environmental Impact Statement, includes all the written comment letters and emails received by the BLM in response to NOA. Appendix D also provides responses to the individual comments and copies of all the written comment letters and emails.

Organizations and Persons Consulted

In addition to the scoping and SA/DEIS public review processes, the BLM has been consulting and coordinating with public agencies who may be requested to take action on the IVS project. That ongoing consultation and coordination is discussed in the following sections.

United States Fish and Wildlife Service

The BLM permit, consultation, and conferencing with the United States Fish and Wildlife Service (USFWS) required for the IVS is to comply with the Federal Endangered Species Act (ESA) for potential take of the Peninsular bighorn sheep and the FTHL. Because Federal agency action has been identified for the IVS project, Section 7 consultation/conferencing between the BLM and USFWS is required prior to any take authorization for the IVS project under the ESA from the USFWS. The BLM has submitted a Biological Assessment (BA) for take of Peninsular bighorn sheep and FTHL to the USFWS for the IVS project. Although the FTHL is not Federally listed under the ESA at this time, it is anticipated this species may be listed during the construction or operation of the IVS project. To avoid or reduce possible time constraints, the FTHL was included in the BA, should this species become Federally listed. The process of consultation with USFWS for the IVS project is ongoing.

United States Army Corps of Engineers

Project-related fill of waters of the U.S. would require authorization by the Corps pursuant to Section 404 of the Federal CWA under a Standard Individual Permit. The CWA Section 404(b)(1) Guidelines govern the issuance of permits authorizing the discharge of fill material into waters of the United States, and state that:

> . . . no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 CFR Section 230.10, Subdivision a).

Under the Section 404 (b)(1) Guidelines, the applicant must demonstrate avoidance or minimization of impacts to waters of the U.S. to the maximum extent practicable. Under those requirements, the Corps can only issue a CWA Section 404 permit for the LEDPA. In addition, the Corps is prohibited from issuing a permit that is contrary to the public interest. (33 CFR Section 320.4).

The Corps' assessment of the proposed project and alternatives emphasizes avoidance and minimization of impacts to waters of the U.S. The assessment method for evaluating temporary and permanent impacts to the physical and biological attributes of the aquatic environment was used by the Corps in preparing the *Draft Section 404B-1 Alternatives Analysis* in accordance with the Section 404(b)(1) Guidelines. The Corps' *Draft Section 404B-1 Alternatives Analysis* is provided in Appendix H. A Final Section 404(b)(1) Alternatives Analysis will be provided with the Corps' ROD. The evaluation of impacts and the development of appropriate mitigation

measures will also be used to demonstrate compliance with requirements for the applicant to provide compensatory mitigation for impacts to waters of the U.S. On April 28, 2008, effective June 10, 2008, the Corps issued new requirements for mitigation (the Mitigation Rule). (73 Federal Register 19594-19705 [April 10, 2008].) As discussed in the Mitigation Rule, the Corps will consider a variety of methods to ensure that any required compensatory mitigation for impacts to jurisdictional waters of the U.S. provides adequate compensation for the loss of physical and biological functions and services in the project area.

The process of consultation with Corps for the IVS project is ongoing. As noted earlier, the Corps is a cooperating agency with the BLM on the FEIS.

National Park Service

The Anza Trail is a cultural resource of national significance for its association with important events in our history and its associations with important persons in our early history, as well as for its information potential. The United States Department of the Interior National Park Service (NPS) is the administrator of the Anza Trail. BLM is consulting with the NPS regarding the Anza Trail corridor in the project area. The consultation with the NPS for the IVS project is ongoing. The NPS is a cooperating agency with the BLM on the FEIS.

Native American Consultation and Coordination

A key part of a cultural resources analysis under CEQA, NEPA, and Section 106 of the National Historic Preservation Act of 1966 (NHPA) is to determine which of the cultural resources that a proposed or alternative action may affect are important or historically significant. In accordance with 36 Code of Federal Register (CFR) Part 800.14(b), Programmatic Agreements (Pas) are used for the resolution of adverse effects for complex project situations and when effects on historic properties (resources eligible for or listed in the National Register of Historic Places (National Register) cannot be fully determined prior to approval of an undertaking. The BLM is preparing a PA in consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), the CEC, interested tribes (including tribal governments as part of government-to-government consultation), and other interested parties. The PA will govern the continued identification and evaluation of historic properties (eligible for the National Register) and historical resources (eligible for the California Register of Historic Places), as well as the resolution of any effects that may result from the IVS project. The consultation with the ACHP, SHPO and Native American Tribal Governments for the IVS project is ongoing.

California Department of Fish and Game

Consultation with the California Department of Fish and Game (CDFG) is anticipated for the impacts to FTHL habitat and possible impacts to waters of the State. It is possible CDFG will determine that a Lake and Streambed Alteration Agreement may be required for the IVS project for the impacts to jurisdictional state waters. The process of consultation with CDFG for the IVS project is ongoing.

Table ES-2 Summary of Air Quality Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Short-term dust and vehicle emissions during construction. Long-term dust, and mobile and stationary fuel/combustion emissions. Beneficial long-term effect associated with the reduction in greenhouse emissions and would not contribute to cumulative adverse impacts.	**Project Design Features** Exhaust emissions control and fugitive dust control. Use of an NSPS-compliant emergency generator, certified tank filling and vehicle refueling vapor recover systems for the 5,000 gal fuel tank, and detailed measures for the operation and maintenance vehicles. **Construction Measures** *AQ-SC1:* Air Quality Construction Mitigation Manager *AQ-SC2:* Air Quality Construction Mitigation Plan *AQ-SC3:* Construction fugitive dust control *AQ-SC4:* Dust plume response requirement *AQ-SC5:* Diesel-fueled engine control **Operations Measures** *AQ-SC6:* Vehicles must meet applicable vehicle emissions standards. *AQ-SC7:* Operations Dust Control Plan. *AQ-SC8:* ICAPCD Authority-to-Construct and Permit-to-Operate documents. *AQ-SC9:* Emergency generator to meet or	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		exceed applicable emissions standards. *AQ-SC10:* Gasoline tank to meet or exceed all vapor recovery and standing loss requirements. **ICAPCD Regulations** *Rule 201:* Authority-to-Construct and Permit-to-Operate documents. *Regulation IV:* Prohibitions (Rule 207: new and modified stationary source requirements, Rule 400: on fuel burning equipment, Rule 401: opacity of emissions, Rule 403: general limitation on the discharge of air contaminants, Rule 405: sulfur compounds emissions standards, limitations, and prohibitions, and Rule 407: nuisance). *Regulation VIII:* Fugitive Dust Rules (Rule 800: general requirements for control of fine particulate matter, Rule 801: construction and earthmoving activities, Rule 802: bulk materials, Rule 803: carry-out and track-out, Rule 804; open areas, Rule 805: paved and unpaved roads, and Rule 806: conservation management practices). *Regulation XI:* NSPS (Rule 1101: NSPS).	
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No short- or long-term dust or vehicle emissions. No long-term beneficial effect.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No short- or long-term dust or vehicle emissions. No long-term beneficial effect.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potential for short- and long-term dust and vehicle emissions and beneficial effects similar to the Agency Preferred Alternative and the IVS project.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; gal = gallon; ICAPCD = Imperial County Air Pollution Control District; IVS = Imperial Valley Solar; MW = megawatts; NSPS = New Source Performance Standards; ROW = right-of-way.

Table ES-3 Summary of Biological Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	• Permanent loss of vegetation communities • Permanent loss of waters of the U.S. and CDFG jurisdictional streambeds • Potential loss of some special-status plant species • Affects on raptors, migratory, and special-status bird species • Take of burrowing mammals • Potential effects on Peninsular bighorn sheep • Take of FTHL • Potential harm to birds from total dissolved solids in evaporation ponds • Attraction to ponds will increase risk of avian collisions with transmission towers • Introduction of noxious weed seed to the project site	• Minimization of vegetation community removal • Funding to BLM for acquisition of 6,619.9 acres of equivalent lands to offset impacts to vegetation communities and suitable for FTHL • Acquisition and preservation of lands with nonwetland waters of the U.S. to be preserved at 1:1 (preservation: impacts) and enhancement, restoration, creation of nonwetland Waters of the U.S. at 2:1(enhancement/restoration/creation: impacts). CDFG will require acquisition and preservation at 1:1 for impacts to CDFG jurisdictional streambeds. • If special-status plant species can not be avoided during construction, required mitigation will be replacement at 2:1 • Avoidance of impacts to vegetation communities to the greatest extent feasible, measures to protect nesting birds, measures to reduce/eliminate risk of bird electrocution, and passive relocation for western burrowing owls. • Passive relocation of American badger and desert kit fox. • Fencing of project site to exclude	Unavoidable adverse impacts to the FTHL individually and on a cumulative basis. No other unavoidable adverse impacts.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		Peninsular bighorn sheep • Exclusionary netting/mesh on evaporation ponds will eliminate risk of bird mortality from ingesting toxic/hypersaline waters • Evaporation ponds located away from transmission towers • Noxious weed management measures during construction **Construction Measures** *BIO-1:* Designated biologist *BIO-2:* Construction monitoring *BIO-3:* FTHL special biologist *BIO-4:* Construction monitors *BIO-5:* Construction measure compliance *BIO-6:* Biological monitoring, construction crew training and compliance *BIO-8:* Biological Mitigation Plan implementation and monitoring *BIO-9:* FTHL Management Strategy *BIO-14:* Bird nesting period avoidance and surveys *BIO15:* American badgers and desert kit fox, pre-construction surveys and avoidance *BIO-16:* Burrowing owl pre-construction surveys and avoidance *BIO-19:* State and Federally listed species pre-	

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		construction surveys and mitigation strategy **Operations Measures** *BIO-7:* Biological Resources Mitigation Plan *BIO-8:* Biological Mitigation Plan implementation and monitoring *BIO-10:* FTHL habitat loss compensation *BIO-11:* Regulatory agency personnel site access for compliance monitoring *BIO-12:* Raven Monitoring and Control Plan *BIO-13:* Evaporation pond wildlife exclusionary measures *BIO-17:* Jurisdictional wetlands compensation *BIO-18:* Noxious Weed Management Plan *BIO-20:* Decommissioning and Reclamation Plan	
709 MW Alternative: Agency Preferred Alternative	Slightly fewer impacts than the IVS project because slightly fewer acres on the site would be affected.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same or similar impacts as the IVS project and the Agency Preferred Alternative because the site could be developed in a solar use.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; CDFG = California Department of Fish and Game; FTHL = flat-tailed horned lizard; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way; U.S. = United States;

Table ES-4 Summary of Climate Change Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Generation of GHG emissions during construction and operation of the SunCatchers. Beneficial effect in replacing high GHG emitting electricity generation with a lower greenhouse emission renewable energy source.	None. Possible need to comply with any future GHG regulations.	None.
709 MW Alternative: Agency Preferred Alternative	Generation of slightly lower GHG emissions during construction and operations than the IVS project. Beneficial cumulative effect in replacing high GHG emitting electricity generation with a lower greenhouse emission renewable energy source.	Same as the IVS project.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	this Alternative.		
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No GHG emissions or beneficial effects on the project site.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No GHG emissions or beneficial effects on the project site.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Could potentially result in GHG emissions and GHG reduction benefits similar to the IVS project and the Agency Preferred Alternative.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; GHG = greenhouse gas; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-5 Summary of Cultural and Paleontological Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	**Cultural Resources** Adverse effect on historic properties. **Paleontological Resources** Adverse impacts during construction to formations with moderate to high sensitivity.	**Cultural Resources** • Identify and evaluate cultural resources in the final APE. • Avoid and protect potentially significant resources. • Develop and implement HPTPs. • Conduct data recovery or other actions to resolve adverse effects. • Monitor construction at known ESAs. • Train construction personnel. • Properly treat human remains. • Monitor construction in areas of high sensitivity for buried resources. • Continue consultation with Native American and other traditional groups. • Protect and monitor National Register-eligible and/or California Register-eligible properties. • Complete identification efforts for the Anza Trail and coordinate mitigation efforts. **Paleontological Resources** *PAL-1:* PRS for mitigation monitoring *PAL-2:* Project maps and construction scheduling information to the PRS. *PAL-3:* PRMMP.	Unavoidable adverse impacts after mitigation to cultural resources as a result of the loss of resources. No unavoidable adverse impacts after mitigation to paleontological resources.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		PAL-4: Worker training. *PAL-5:* Construction monitoring. *PAL-6:* Implementation of all components of the PRMMP. *PAL-7:* Paleontological Resources Report.	
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No effect on historic properties and paleontological resources.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No effect on historic properties and paleontological resources.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same impacts on historic resources and paleontological resources as the IVS project covering the entire site.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: APE = Area of Potential Effects; California Register = California Register of Historical Resources; CDCA Plan = California Desert Conservation Area Plan; ESA = Environmentally Sensitive Area; HPTP = Historic Properties Treatment Plan; IVS = Imperial Valley Solar; MW = megawatts; National Register = National Register of Historic Places; PRMMP = Paleontological Resources Monitoring and Mitigation Plan; PRS = Paleontological Resource Specialist; ROW = right-of-way.

Table ES-6 Summary of Fire and Fuels Management Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Potential for increases in fuel from vegetation; and fires during construction and operation.	WORKER-1: Project Construction Safety and Health Program WORKER-2: Project Operations Safety and Health Program	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Possibly similar to the Agency Preferred Alternative and the IVS project.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-7 Summary of Geology, Soils, Topography, Mineral Resources, and Seismic Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Potential effects to project structures associated with seismic ground motion, liquefaction, local subsidence, and expansive soil. No impacts related to mineral resources and Mineral Resources Zones. No contribution to regional subsidence,	*GEO-1:* compliance with building codes and regulations. *GEO-2:* design of drainage structures, grading plan, erosion and sedimentation plan; and soils, geotechnical, or foundation plans.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts related associated with seismic ground motion, liquefaction, local subsidence, expansive soil, mineral resources. and Mineral Resources Zones.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts related associated with seismic ground motion, liquefaction, local subsidence, expansive soil, mineral resources. and Mineral Resources Zones.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Impacts potentially similar to the Agency Preferred Alternative and the IVS project	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-8 Summary of Grazing, and Wild Horses and Burros Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	No impacts to grazing or rangelands, designated Herd Areas or Herd Management Areas, wild horses and burros, or conflicts with the CDCA Plan Wild Horse and Burro Element. No contribution to cumulative impacts related to wild horses and burros.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #2 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-9 Summary of Land Use Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	The IVS project would impact planned land uses as designated in the CDCA Plan (1980 as amended) and the WECO Off-Road Vehicle Access and Trail System designated Open Routes. The conversion of 6,500 ac of land would constrain the existing recreational uses on site and would result in adverse effects on recreational users of these lands. Approximately 1 million acres of land are proposed for solar and wind energy development in the Southern California desert lands. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore, result in an adverse cumulative impact.	*LAND-1:* Legal parcel creation through Subdivision Map Act Amendment of the CDCA Plan to allow this solar project on the site. Amendment of the WECO Off-Road Vehicle Access and Trail System designated Open Routes on the project site.	The IVS project would result in unavoidable adverse impacts related to the conversion of 6,500 ac of land and recreational users of these lands; reduced OHV access routes and recreational opportunities on the site as envisioned in the CDCA Plan and the WECO amendment. The IVS project, with other solar and wind energy development in the Southern California desert, would contribute to a cumulative adverse impacts related to he conversion of those lands.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the Agency Preferred Alternative and the IVS project.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way; WECO = Western Colorado Desert Routes of Travel Designations.

Table ES-10 Summary of Noise Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Potential short-term adverse impacts during construction. Potential long-term increases in noise levels during operations.	*NOISE-1:* Notice of the initiation of construction and telephone contact information for complaints during construction and the first year of operation. *NOISE-2:* Implementation and documentation of the noise complaint process and the Noise Complaint Resolution Form during construction and operation. *NOISE-3:* Development and implementation of a noise control program during construction. *NOISE-4:* Community noise survey and implementation of measures to meet specific noise restrictions during operations. *NOISE-5:* Occupational noise survey and appropriate mitigation during operations. *NOISE-6:* Construction time restrictions.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the Agency Preferred Alternative and IVS project.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-11 Summary of Public Health and Safety, and Hazardous Materials Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	During construction, operations, and decommissioning, the IVS project may result in potential risks to public health related to airborne dust; equipment and vehicle emissions; use, handling, storage, and disposal of hazardous materials; and disturbance of contaminated soils. During operations, the IVS project may result in risks associated with the use and storage of quantities of hydrogen on the site, potential spills of hazardous materials, transportation of hazardous materials, seismic ground shaking, and site security.	*HAZ-1:* Use of specified hazardous materials only *HAZ-2:* Hazardous Materials Business Plan *HAZ-3*: Safety Management Plan for delivery of liquid hazardous materials *HAZ-4:* Construction Site Security Plan *HAZ-5:* Operation Security Plan *HAZ-6:* Compliance with all applicable Federal laws and regulations related to hazardous and toxic materials *WASTE-1:* Experienced and qualified professional engineer or geologist for site characterization during (if needed), demolition, excavation, and grading activities *WASTE-2:* Inspection, sampling, and written report when potentially contaminated soil is identified *WASTE-3:* Construction Waste Management Plan *WASTE-4:* Obtain a hazardous waste generator identification number from the United States Environmental Protection Agency *WASTE-5:* Proper notification and documentation of any waste management-	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		related enforcement action by any local, state, or Federal authority *WASTE-6:* Reuse/recycling plan for at least 50% of construction and demolition materials *WASTE-7:* Operation Waste Management Plan *WASTE-8:* All spills or releases of hazardous substances, hazardous materials, or hazardous waste are properly documented, cleaned up and wastes from the release/spill are properly managed and disposed of	
709 MW Alternative: Agency Preferred Alternative	Impacts similar to but reduced compared to the IVS project because of the reduction in the disturbed area and the number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Impacts similar to the IVS project and the Agency Preferred Alternative, but substantially reduced in magnitude due to the reduced area and number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Impacts would be similar to the IVS project and the Preferred Agency Alternative, but reduced in magnitude due to the reduced disturbed area and number of SunCatchers in this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Impacts would be similar to the IVS project and the Preferred Agency Alternative, but reduced in magnitude due to the reduced disturbed area and number of SunCatchers in this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-12 Summary of Recreation Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	• Impacts to OHV Open Routes. • Vicinity impacts to the Anza Trail Corridor historic context. • Cumulative impacts to recreational opportunities in the California desert.	*REC-1:* Comprehensive Interpretive Plan for the Anza Trail	The IVS project would result in unavoidable adverse impacts after mitigation related to: The conversion of over 6,000 ac of land would disrupt current recreational activities in established Federal, State, and local recreation areas which would result in adverse effects on recreational users of these lands. Adverse land use and planning impacts to recreation opportunities on the site as envisioned in the CDCA Plan and the WECO amendment. A cumulative change to the visual and historic context of the Anza Trail to the overall recreational experience of the Anza Trail.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Impacts would be the same as for Phase I of the IVS project on approximately 2,600 ac. Therefore, the impacts would only occur on the west half of the project site and would be reduced accordingly, including reduced adverse impacts on the Anza Trail corridor compared to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	The conversion of 4,690 ac of land to support the components and activities associated with this Alternative would disrupt less land than under the IVS project and the Agency Preferred Alternative. The impacts to the Anza Trail would be the same as or similar to the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	The conversion of 3,153 ac of land to support the components and activities associated with this Alternative would disrupt less land than under the IVS project and the Agency Preferred Alternative. This Alternative would be on the central part of the project site and would likely result in reduced adverse	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	impacts on the Anza Trail corridor compared to the IVS project and the Agency Preferred Alternative.		
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	The site would be available for other solar projects, which could result recreation impacts similar to those under the IVS project and the Agency Preferred Alternative.	Potentially the same as the IVS project and the Agency Preferred Alternative.	Not determined, but potentially the same as or similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: ac = acres; Anza Trail = Juan Bautista de Anza National Historic Trail; CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; OHV = off-highway vehicle; ROW = right-of-way; WECO = Western Colorado Desert Routes of Travel Designations.

Table ES-13 Summary of Socioeconomics and Environmental Justice Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	No impacts related to growth, need for new housing, displacement of existing housing and residents, and government facilities and services (emergency medical services, law enforcement, education, recreation facilities). Beneficial effects related to the creation of jobs, and economic effects based on expenditures for the project. Contribution to beneficial cumulative effects but no adverse cumulative effects.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts to growth and no beneficial effects.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts to growth and no beneficial effects.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-14 Summary of Special Designations Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas. Conversion of designated agricultural land to nonagricultural uses; not considered an adverse impact.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #2 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas. Would not result in the conversion of less designated agricultural land to nonagricultural uses.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas. Would not result in the conversion of designated agricultural land to nonagricultural uses.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not expected to impact Wilderness Areas, Areas of Environmental Concern or Special Areas. May result in the conversion of less designated agricultural land to nonagricultural uses; not considered an adverse impact.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-15 Summary of Traffic Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Short-term traffic impacts on area roads during construction. Construction of a crossing of existing railroad tracks. Damage to area roads during construction. Potential glare on vehicles on area roads. No impacts related to parking, emergency services vehicle access, water traffic, and air traffic. Will not contribute to cumulative impacts sufficient to result in adverse impacts on study area roads or intersections.	TRANS-1: traffic control plan. TRANS-2: required agreement with railroad owner. TRANS-3: repair or compensation for damaged road surfaces. TRANS-4: SunCatcher Mirror Positioning Plan	None.
709 MW Alternative: Agency Preferred Alternative	Fewer impacts than the IVS project due to the smaller number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts at the project site; potential impacts at sites of other renewable energy projects.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts at the project site; potential impacts at sites of other renewable energy projects.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Impacts potentially similar to the Agency Preferred Alternative and the IVS project.	None identified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

Table ES-16 Summary of Visual Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	The IVS project would result in permanent visual changes to the desert landscape and would introduce development in an area that is visually open and predominantly free of development. The visual impacts of project grading and construction would be considerable and would include a highly industrial scene of assembly and installation of the SunCatcher units. The project will introduce new sources of glare from the SunCatchers and nighttime lighting. Visual recovery from land disturbance after decommission-ing could occur, although only over a long period of time, with implementation of a comprehen-sive revegetation program.	**Construction Measures** *VIS-7:* Setback and revegetation of staging area **Operations Measures** *VIS-1:* Surface treatment of project structures and buildings *VIS-2:* Temporary and permanent exterior lighting *VIS-3:* Realignment of proposed transmission interconnection *VIS-4:* Setback of SunCatchers from I-8 *VIS-5:* Beneficial assessment compensation to NPS/BLM for impacts to Anza Trail *VIS-6:* SunCatcher MPP	Given the high level of viewer sensitivity of the area and the fact that the site is undeveloped the visual impacts of the IVS project after mitigation are considered unavoidable and adverse after mitigation for construction and operations. The visual impacts of the IVS project in combination with other cumulative projects in the West Mesa/Yuha Desert region, and the southern California desert are considered cumulatively unavoidable and adverse after mitigation. There may be cumulative adverse visual impacts as a result of the decommissioning of the IVS project in combination with effects of decommissioning of nearby cumulative projects and the time span involved for recovery of the landscape.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Similar to the Agency Preferred Alternative, but because of the smaller development area, the degree and extent of those impacts would be substantially less than under the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	The visual impacts of this Alternative would be similar to the impacts under the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Similar to the Agency Preferred Alternative, but because of the smaller development area, the degree and extent of those impacts would be less extensive than under the IVS project and the Agency Preferred Alternative	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same as or similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially the same as or similar to the IVS project and the Agency Preferred Alternative.	Potentially the same as or similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; I-8 = Interstate 8; IVS = Imperial Valley Solar; MPP = Mirror Positioning Plan; MW = megawatts; NPS = United States National Park Service; ROW = right-of-way.

Table ES-17 Summary of Water Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	The construction, operation, and decommissioning of the IVS project could potentially adversely impact soils, surface water, flooding, surface water quality, groundwater quality, and water supply. The IVS project will result in the short-term use of a local well in the Ocotillo/Coyote Wells Groundwater Basin which is part of the sole source aquifer. The IVS project would result in increased erosion potential on the site during construction and increased potential for pollutant runoff.	**Construction Measures** *SOIL&WATER-1:* Drainage Erosion and Sedimentation Control Plan *SOIL&WATER-3:* Industrial Facility SWPPP *SOIL&WATER-5*: NPDES General Permit for Construction Activity **Operations Measures** *SOIL&WATER-2:* Monitoring and verification of water use *SOIL&WATER-4:* Potable water requirements *SOIL&WATER-6:* Waste Discharge Requirements *SOIL&WATER-7:* Storm Water Damage Monitoring and Response Plan *SOIL&WATER-8:* Septic System and Leach Field Requirements *SOIL&WATER-9:* Assured water supply *SOIL&WATER-10:* Decommissioning Plan	None.
709 MW Alternative: Agency Preferred Alternative	Fewer impacts than the IVS project due to the construction of a smaller number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; NPDES = National Pollutant Discharge Elimination System NPDES; ROW = right-of-way; SWPPP = Storm Water Pollution Prevention Program.

Table ES-18 Issues Raised During Scoping

Subject	Scoping Issue
Purpose and Need	Provide a clear and objective statement of the project's purpose and need.
Project Description	Consider granting ROW for Phase I only, with Phase II dependent on approval and finalization of the Sunrise Power Link project; consider establishing requirements for a demonstration of technological and economic viability within 3 to 5 years of approval of ROW before extending the length of the ROW approval; analysis of the energy return on investment to assess the net energy production value of the project; cash bonds to cover future decommissioning costs phased consistent with the project phasing; why is the electricity generated not going to be available to IID for use in Imperial County; how will high winds and fine-grained dust affect the moveable parts of the SunCatcher assembly, the MTBF, and the need to clean the mirrors; how will the assembly be protected from the effects of high winds, sand, and dust; concern regarding viability of technology and going from small prototype to large-scale commercial facility without an intermediate level of facility or experience; project phasing; what factors will contribute to MTBF and ongoing facility maintenance; how will materials for the project be brought to the site; how much hydrogen will be stored on site; where will it be located on site; will components have any resale or recycling value; how much material might end up in landfills; who will be responsible for the bond costs; how will higher summer temperatures in Imperial County affect the system; how much water will need to be used for mirror cleaning; how much will run off into the ground versus evaporation; what effect will gypsum dust from the US Gypsum Plaster City factory have on the facilities; what was the MTBF at the New Mexico site; what is the estimated MTBF at the proposed site; how will TDS in the wastewater impoundment areas be handled to avoid runoff outside the impoundment areas or becoming airborne as dust; how will TDS be disposed of; how will the impoundment areas be managed and maintained; how will the waste impoundment areas be addressed when the facility is decommissioned, including restoration of the land; what strategies will minimize attracting birds to the wastewater impoundment areas; will the technology work; will it hold up to desert weather; not cost competitive; concerned other technologies will quickly make this technology obsolete; taxpayer liability; relationship to the Southwest Power Link and role of Sempra; SunCatcher reliability is not proven in actual operations; issues related to metal creep, metal fatigue, and seal integrity; construction of SunCatchers on site: where will that facility be, how big will it be, what are the impacts of that facility; need data on current wind conditions to understand the effects of wind resulting in downtime; does Sunrise Power Link have sufficient transmission capacity available for the project; if not, are there other sources of capacity available; need better description of evaporation ponds and the waste materials generated in those ponds; costs to produce electricity too high; refer to the San Diego Smart Energy 2020 report; concerned about availability of funding for the project; do not want transmission lines through open desert or through Anza Borrego Desert State Park; concern regarding life expectancy of dishes and what

Subject	Scoping Issue
	happens when they are abandoned; is there available capacity in the Southwest Power Link project: concern about the BLM land use amendment and its relationship to the updated resource management plan; will project need tax breaks or incentives; why not build the fabrication factory in the project area; what will the cost of the project be to ratepayers; concern regarding the differences between Sandia, New Mexico and the Imperial Valley; prototype was a smaller scale and in a different type of area; question regarding the value and disposal of scrap metal when the project is decommissioned; questions regarding parcels that are not part of the project or are immediately adjacent to the project site and how access and other considerations regarding those parcels will be addressed; will project roads will be paved, issue of dust generation: frequency of mirror washing; concerns regarding the reliability of the process and the ability to provide the number of solar dishes proposed for this and other projects; concerns about where the engines will be on the site; concerned that project is in early phases without details on funding and manufacturing of the project component; how does the IVS project energy generation process work; when would construction start; when will the draft land use amendment be released.
Alternatives	Provide a robust range of alternatives; explain why some alternatives were eliminated; look at alternative sites like Mesquite Lake, sites already disturbed by agriculture, or multiple sites, capacities, technologies; prioritize use if already disturbed lands and in proximity to existing transmission lines; suggest the No Action Alternative include other energy-generating options; suggest installing units in San Diego County closer to the users of the electricity or in Imperial County at dispersed locations; use the SunCatcher dish at existing natural gas or coal-fired power plants; need a project between small amount of units tested at Sandia and total proposed number of units for the project; suggest 1 MW; other technologies are less destructive, expensive, and time consuming for approvals/litigation; site closer to water sources to take advantage of gravity flow and avoid the need for pumps; alternative sources for San Diego in San Diego: rooftop solar, photovoltaics, distributed electricity; concerned that industry thinks public lands are a less expensive way of getting land than using fallowed farmlands, abandoned feedlots, areas where the soil is sterile, parking lots, rooftops; in-base and solar rooftop alternatives; disperse units to provide electricity to the prison, schools, hospitals, etc. or to IID or to meet high daytime demand in the county; concern regarding use of public lands for so many projects, including renewable energy when there are alternative areas where those projects could be located; shift from large mega stations to decentralized, localized, and alternative sources.
Air Quality	Ambient air quality; quantify project emissions; identify emissions sources (mobile, stationary, ground disturbance); identify the need for an EEMP and Fugitive Dust Control Plan during construction; particulate matter less than 10 microns in size; prevention of air quality impacts during project construction and operation; concerned regarding dust and potential health (asthma) effects on children; effects of sand storms and white

Subject	Scoping Issue
	clouds from Plaster City; concerned regarding bringing dirty fossil fuels from Mexico to support the SDG&E/Sempra projects; effect of dust on the mirrors and other moving parts of the project; concerns regarding carbon sequestration on the affected land; air quality permit and dust mitigation; airborne soil fungi and potential effects on prisoners at the State Prison and as a general public health issue; potential impacts related to dust, hydrogen gas, and diesel emissions, and cumulative impacts with other area land uses.
Biological Resources	Threatened and endangered species; baseline conditions; how avoidance, minimization, and mitigation measures will protect species; long-term management and monitoring efforts; impacts to sensitive plants and animals; conduct species surveys at appropriate times of the year; invasive species during construction and operation and how they will be controlled, invasive species management plan and restoration of native species; prioritize protection of species in the project area; jurisdictional delineation; wastewater ponds should not be attractive to wildlife; effects on the burrowing owl and the flat-tailed horned lizard; need for a Streambed Alteration Agreement from the California Department of Fish and Game; impacts to big horn sheep and sheep migration route to Mexico.
Climate Change	Address climate change and potential effects on demographics in San Diego; how climate change could potentially affect the project; identify any climate change benefits of the project.
Aviation Impacts	Air space impacts; glare to pilots.
Cultural Resources	Complete surveys of cultural artifacts, sites, and areas in the project area; local archaeologists should be considered; ongoing consultation with Native American tribes is needed; need to address cumulative impacts; describe process for and outcome of government-to-government consultation; discuss any National Register of Historic Places properties and any Indian Sacred Sites; development of a Cultural Resources Management Plan; prioritize protection of area's cultural resources; develop strategies to minimize and mitigate effects on cultural resources; address issues related to site potentially being designated as an ATCC; seek input from Native American groups and the State Historic Preservation Officer; potential for project and cumulative impacts on cultural resources; Concerned regarding impacts on cultural resources, National Register of Historic Places resources, Lake Cahuilla, District for the Yuha Intaglios, and cremation sites; concern regarding survival of Native American culture; include a Native American monitor in site surveys; cumulative impacts of solar and geothermal projects on BLM lands; potential sacrificial burial areas; concern regarding impacts outside immediate disturbance areas; concern regarding cultural resources, archaeological sites, historic trails in the area; concern that cultural studies be conducted by persons familiar with the desert and desert cultures; concern that Native American issues be handled appropriately and sensitively; engage Native American leaders to provide input on the cultural integrity of the area.

Subject	Scoping Issue
Cumulative Impacts	Identify resources that may be cumulatively impacted and the geographic area that will be impacted by the project; look at past impacts on resources; identify opportunities to avoid and minimize cumulative impacts; consider potential for cumulative impacts of this project and other nonrenewable and renewable energy, and land development projects; cumulative impacts on biological resources, cultural resources, environmental justice, air quality, visual resources, and recreation uses/users; concerned about cumulative impacts of various renewable energy projects on 2.5 million acres of BLM lands.
Environmental Justice	Identify environmental justice populations in the project area and potential impacts on those populations; are the impacts disproportionate on those populations; discuss any coordination with environmental justice populations.
Hazardous Materials and Wastes, Hazards, and Public Health and Safety	Potential for direct, indirect, and cumulative impacts of hazardous wastes generated during project construction and operation; identify types and volumes of wastes and handling, storage, disposal, and management plans; consider alternative industrial processes using less toxic materials; effects of hydrogen leakage and strategies to minimize and mitigate impacts; issues associated with the potential for Valley Fever; risks to project employees and prisoners at Centinela State Prison; concern regarding reflection from mirrors on drivers and aircraft.
Land Use	Identify consistency and/or conflicts with Federal, State, Tribal, and local land use plans, policies, and controls in the project study area; address project and cumulative loss of public lands to other uses (particularly energy projects); impacts to community character in the Ocotillo and Nomirage communities; definition of “limited use” designation.
Noise	Impacts to community character in the Ocotillo and Nomirage communities; noise impacts.
Recreation	Effects on recreational users, including potential hazards to those users associated with the project facilities; identify appropriate safety precautions; impacts to recreational experience at the Plaster City Open Area, Superstition Hills Recreation Area, Painted Gorge Recreation Area, and Anza-Borrego Desert State Park; cumulative effects on recreation uses/users and general quiet enjoyment of public lands.
Seismic	Potential damage/risks to project associated with seismic activity, including activity on the nearby Elsinore/Laguna Salada fault.
Socioeconomics	What kind of jobs at what skill levels will be created; will those jobs be met by existing employees in Imperial County, other American workers, or will they require employees from other countries; what are the economic impacts of the project; concern that jobs go to local people and not people brought from outside the community.
Traffic	Include traffic associated with Centinela State Prison.

Subject	Scoping Issue
Visual Resources	Effects on visual resources in the area, including potential cumulative effect of this and other projects in the area; impacts to community character in the Ocotillo and Nomirage communities, dark skies impacts; potential for glare impacts on motorists on Interstate 8, other streets, and United States Navy, United States Border Patrol, and general aviation activities in the area; assess impacts consistent with the BLM Visual Resources Management guidelines; importance of visual resources in the desert; effects of motion-sensitive lighting.
Water Supplies and Use	Evaluate project need for water and effects on water supply; clarify the water rights permitting process; impacts on Ocotillo/Nomirage aquifer; overall effect on demand for water; confirm that the water needed for the project is available and consistent with existing CEC policy; objects to the use of drinkable water from the Ocotillo aquifer for industrial uses; not clear that IID has committed to provide the water needed for the project; does not think there is sufficient water available for the project; the amount of water that would be stored on site and the issue of evaporation; which aquifer water will come from; concern regarding the demand for water to wash the mirrors.
Groundwater	Direct and indirect effects on groundwater; question effects of high TDS in area groundwater.
Surface Waters	Impacts on springs, open water bodies, and other aquatic resources; need for a Section 404 permit; discuss Section 303(d) impaired waters in the project area; effects on watercourses and groundwater; effects of rare floods on project facilities; debris basins located in floodplains; need for a general or individual storm water permit during construction; coordinate with appropriate water quality control agencies.

Table Source: Final Scoping Report (LSA Associates, Inc. 2009).

Table Key: ATCC = Area of Traditional Cultural Concern; BLM = United States Bureau of Land Management; CEC = California Energy Commission; EEMP = Equipment Emissions Mitigation Plan; MTBF = mean time between failure; MW = megawatts; ROW = right-of-way; SDG&E = San Diego Gas and Electric; TDS = total dissolved solids.

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LIST OF ABBREVIATIONS AND ACRONYMS

$\mu g/m^3$	micrograms per cubic meter
°F	degrees Fahrenheit
A	ampere (amp)
AAQS	ambient air quality standards
AB	Assembly Bill
ac	acres
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AERMOD	AMS/EPA Regulatory Model
af	acre-feet
AFC	Application for Certification
afy	acre-feet per year
AIChE	American Institute of Chemical Engineers
AML	appropriate management level
AMPs	Allotment Management Plans
AMS	American Meteorological Society
amsl	above mean sea level
AMT	alternative minimum tax
ANSI	American National Standards Institute

Anza Trail	Juan Bautista de Anza National Historic Trail
AO	Authorized Officer
APCDs	Air Pollution Control Districts
APCO	Air Pollution Control Officer
APE	Area of Potential Effects
API	American Petroleum Institute
APLIC	Avian Power Line Interaction Committee
APN	Assessor's Parcel Number
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARB	California Air Resources Board
ASME	American Society for Material Engineering
AST	aboveground storage tank
ASTM	American Society for Testing Materials Standards
ATC	Authority to Construct
ATCC	Area of Traditional Cultural Concern
ATCM	Airborne Toxic Control Measure
AWEA	American Wind Energy Association
BA	Biological Assessment

BAAQMD	Bay Area Air Quality Management District
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BCC	birds or conservation concern
bgs	below ground surface
bhp	brake-horsepower
BIL	basic impulse level
BIS	Department of Business Innovation & Skills
BLM	United States Bureau of Land Management
BMPs	best management practices
BOR	Bureau of Reclamation
BRMIMP	Biological Resources Mitigation Implementation and Monitoring Plan
CAA	Clean Air Act
CAL FIRE	California Department of Forestry and Fire Protection
Cal-ARP	California Accidental Release Program
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Cal-OSHA	California - Occupational Safety and Health Administration
CalPIF	California Partners in Flight
CAPCOA	California Air Pollution Control Officers Association
CBC	California Building Code
CBEA	California Biomass Energy Alliance

CBO	Conference of Building Officials
CBOC	California Burrowing Owl Consortium
CBSC	California Building Standards Code
CC	City Council
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCTV	closed circuit television
CDCA	California Desert Conservation Area
CDCA Plan	California Desert Conservation Area Plan
CDD	California Desert District
CDE	California Department of Education
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFATS	Chemical Facility Anti-Terrorism Standard
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey

CH_4	methane
CHP	California Highway Patrol
City Council	City of El Centro City Council
CIWMB	California Integrated Waste Management Board
CMUP	Comprehensive Management and Use Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNF	Cleveland National Forest
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
Corps	United States Army Corps of Engineers
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CRAM	California Rapid Assessment Method
CRS	Congressional Research Service
CSC	California Species of Special Concern
CSP	California State Parks
CTG	Combustion Turbine Generator
CTTM	Comprehensive Travel and Transportation Management
CUPA	Certified Unified Program Authority

CURE	California Unions for Reliable Energy
CWA	Clean Water Act
cy	cubic yards
D	dynamic volt amp reactive
D	Delisted
dBA	A-weighted decibels
DDT	Dichloro-diphenyl-trichloroethane
DESCP	Drainage, Erosion, and Sedimentation Control Plan
DHS	Department of Homeland Security
DMG	Division of Mines and Geology (now called California Geological Survey)
DNA	Determination of NEPA Adequacy
DOC	California Department of Conservation
DOE	United States Department of Energy
DOI	United States Department of Interior
DOJ	United States Department of Justice
DOT	Department of Transportation
DPM	diesel particulate matter
DPS	Distinct Population Segment
DTC	Desert Training Center
E3	Energy and Environmental Economics, Inc.
EA/FONSI	Environmental Assessment/Finding of No Significant Impact
EB	eastbound

EEC	Eastshore Energy Center
EEMP	Equipment Emissions Mitigation Plan
EERE	Energy Efficiency and Renewable Energy
EFD	El Centro Fire Department
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
EO	Executive Order
EPA	United States Environmental Protection Agency
EPRI	Electric Power Research Institute
EPS	Emission Performance Standard
ERC	Emission Reduction Credit
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDOC	Final Determination of Compliance
FE	Federally listed as endangered
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration

FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
fps	feet per second
FR	Federal Register
ft	feet
FT	Federally listed as threatened
FTA	Federal Transit Administration
FTHL	flat-tailed horned lizard
g	estimated peak site acceleration
gal	gallon
gal/min	gallons per minute
GCC	Global Climate Change
GEA	Geothermal Energy Association
GHG	greenhouse gas
GIS	geographic information system
gpd	gallons per day
GSU	generator set-up unit
GWh	gigawatt-hour
GWR	groundwater recharge
H_2S	hydrogen sulfide
HABS	Historic American Building Survey

HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HAP	Hazardous Air Pollutant
HARP	Hotspots Analysis Reporting Program
HAs	Herd Areas
HCM	Highway Capacity Manual
HEC-RAS	Hydrologic Engineering Center River Analysis System
HFCs	hydrofluorocarbons
HI	Hazards Index or Chronic Hazards Index
HMAs	Herd Management Areas
HMBP	Hazardous Materials Business Plan
hp	horsepower
HPTP	Historic Properties Treatment Plan
HRA	Health Risk Assessment
HRP	Habitat Restoration Plan
HSC	Health and Safety Code
HUC	hydrologic unit code
Hwy 80	United States Highway 80
Hz	Hertz
I-8	Interstate 8
ICAPCD	Imperial County Air Pollution Control District
ICC	Interagency Coordinating Committee

ICDTSC	Imperial County Department of Toxic Substances Control
IEPR	Integrated Energy Policy Report
IID	Imperial Irrigation District
in	inches
in/sec	inches per second
IND	Industrial Service Supply
INT	international
ISCST	Industrial Source Complex Short Term
ISO	Independent System Operator
ITC	investment tax credit
IUSD	Imperial Unified School District
IVEDC	Imperial Valley Economic Development Corporation
IVRM	Interim Visual Resource Management
IVS	Imperial Valley Solar
K	erosion factor
kA	kilo-amps
KOPs	key observation points
kV	kilovolt
kVA	kilovolt-amperes
kVAR	kilovolt-ampere reactive
kW	kilowatt
kWe	kilowatt-electric

LADWP	Los Angeles Department of Water and Power
lbs	pounds
L_{dn}	day-night average noise level
LE	Land Evaluation
LEDPA	Least Environmentally Damaging Practicable Alternative
L_{eq}	equivalent continuous sound level
LESA	Land Evaluation and Site Assessment
LESA Model	Land Evaluation and Site Assessment Model
LID	Low Impact Development
LLC	Limited Liability Corporation
LORS	laws, ordinances, regulations, and standards
LOS	level of service
LRAs	Local Reliability Areas
LUP	Land Use Plan
MA	management area
MBTA	Migratory Bird Treaty Act
MCR	Monthly Compliance Report
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mi	miles

ml	milliliters
ML	Measuring Location
mm	millimeters
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
mph	miles per hour
MPP	Mirror Positioning Plan
MRZ	Mineral Resource Zone
MSA	Metropolitan Statistical Area
msl	mean sea level
MT	metric ton
MTBF	mean time between failure
$MTCO_2e$	metric tons of carbon dioxide equivalent
MTS	Metropolitan Transit System
MUC L	Multiple-Use Class Limited
MUN	Municipal and Domestic Water Supply
MVA	megavolt-amperes
MVAR	megavolt-ampere reactive
MW	megawatts
Mw	Maximum Earthquake Magnitude
MWh	megawatt-hour
N/A	Not Applicable

N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFP	National Fire Plan
NFPA	National Fire Protection Association
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	United States National Park Service
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council

NSPS	New Source Performance Standard
NSR	New Source Review
NTP	Notice to Proceed
O&M	operations and maintenance
O_2	oxygen
O_3	ozone
OCA	Off-site Consequence Analysis
OCWGB	Ocotillo/Coyote Wells Groundwater Basin
OEHHA	Office of Environmental Health Hazard Assessment
OHV	off-highway vehicle
OII	Order Initiating an Informational
OLM	Ozone Limiting Method
OSHA	United States Occupational Safety and Health Administration
OTC	once-through cooling
PA	Programmatic Agreement
PA	Planning Area
PALS	pre-acquisition liability survey
PBS	Peninsular bighorn sheep
PCA	Pest Control Advisor
PCU	power conversion unit
PDF	Portable Document Format
PDOC	Preliminary Determination of Compliance

PEIS	Programmatic Environmental Impact Statement
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PL	Public Law
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PMI	Point of Maximum Impact
POD	Plan of Development
PPA	Power Purchase Agreement
ppm	parts per million
ppmv	parts per million by volume
ppmvd	parts per million by volume, dry
PRC	Public Resources Code
PRIA	Public Rangelands Improvement Act of 1978
PRM	Paleontological Resource Monitors
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PRPA	Paleontologic Resources Preservation Act
PRS	Paleontological Resources Supervisor
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
psi	pounds per square inch

PTO	Permit to Operate
PTZ	pan, tilt, and zoom
PV	photovoltaic
PVC	polyvinyl chloride
QFER	Quarterly Fuel and Energy Report
R	Rare
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RCRA	Resource Conservation and Recovery Act
REC I	Water Contact Recreation
REC II	Non-contact Water Recreation
RECs	Recognized Environmental Conditions
REF	Renewable Electricity Future
RELs	Reference Exposure Levels
RETI	Renewable Energy Transmission Initiative
RMP	Resource Management Plan
RO	reverse osmosis
ROD	Record of Decision
ROG	reactive organic gases
Route S80	Imperial County Route S80
ROW	right-of-way
ROWD	Report of Waste Discharge

RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
RUSLE2	Revised Universal Soil Loss Equation
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
S	Sensitive
SA/DEIS	Staff Assessment/Draft Environmental Impact Statement
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SC	sediment control
SCADA	supervisory control and data acquisition
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SCE	Southern California Edison
SCEC	Southern California Earthquake Center
scf	standard cubic feet
scfh	standard cubic feet of hydrogen per hour
SCPBRG	Santa Cruz Predatory Bird Research Group
SCWD	Seeley County Water District
SDAR	San Diego and Arizona Railroad
SDG&E	San Diego Gas and Electric Company
SE	State listed as endangered

SES	Stirling Energy Systems
sf	square feet
SF_6	sulfur hexafluoride
SFP	State fully protected
SHPO	State Historic Preservation Officer
SIC	Southeastern Information Center
SIP	State Implementation Plan
SLF	Sacred Lands File
SO_2	sulfur dioxide
SO_4	sulfate
SO_X	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SPRR	Southern Pacific Railroad
sq mi	square miles
SQRUs	Scenic Quality Rating Units
SR-111	State Route 111
SR-98	State Route 98
SRA	State Responsibility Area
SRP	Scientific Review Panel
SS	soil stabilization
SSAB	Salton Sea Air Basin
SSAB	Salton Sea Air Basin

ST	State listed as threatened
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWWTP	Seeley Wastewater Treatment Plant
TAC	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TC	tracking control
TDS	Total Dissolved Solids
TGA	Taylor Grazing Act
TMDLs	Total Maximum Daily Loads
TNW	traditional navigable water
tpy	tons per year
UBC	Uniform Building Code
URS	URS Corporation
US	United States
USBR	United States Bureau of Reclamation
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
UV	ultraviolet
V	volts
VAC	volts alternating current
VAR	volt-ampere reactive
VdB	velocity decibel
VDE	Visible Dust Emission
VMT	vehicle miles traveled
VOCs	volatile organic compounds
VRM	Visual Resource Management
W	watts
WAs	Wilderness Areas
WB	westbound
WDR	Waste Discharge Requirement
WE	wind erosion
WEAP	Worker Environmental Awareness Program
WEC	World Energy Council
WECC	Western Electricity Coordinating Council
WECO	Western Colorado Desert Routes of Travel Designations
WILD	Wildlife Habitat
WL	Watch List
WRCC	Western Regional Climate Center

WSS	Web Soil Survey
WTE	Wave & Tidal Energy
ybp	years before present
YDMP	Yuha Desert Management Plan
yr	year
ZOI	zone of influence

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Chapter 1
Introduction and Purpose and Need

1.1 Project Overview

The Imperial Valley Solar (IVS) project is a privately proposed solar power farm that would be located on approximately 6,500 acres (ac) of vacant land in southwestern Imperial County, California, south of Evan Hewes Highway and north of Interstate 8 (I-8). The project site includes about 6,140 ac of Federal land managed by the United States Bureau of Land Management (BLM) and approximately 360 ac of privately owned land. The site is about 100 miles (mi) east of San Diego, 14 mi west of El Centro, approximately 4 mi east of Ocotillo Wells, and south of a gypsum processing site known as Plaster City.

The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) in February 2010.

The IVS project would be a primary power generating facility constructed in two phases. Phase 1 would include the construction and operation of a 300-megawatt (MW) facility and Phase 2 would include the construction and operation of facilities to generate an additional 450 MW. Power would be generated by up to 30,000 SunCatcher solar dish collectors which would be supported on individual metal pipe or drilled pier foundations. Each SunCatcher consists of a solar receiver heat exchanger and a closed-cycle, high-efficiency Solar Stirling Engine specifically designed to convert solar power to rotary power and then drive an electrical generator to produce electricity. Supporting facilities would include an operation and administration building, a maintenance building, 3 assembly buildings, a substation, a metal canopy cover for a water treatment plant, and storage tanks for fuel and water. Ancillary facilities associated with the solar array would include 2 utility lines, a new approximately 7.2 mi long water supply pipeline, and a new approximately 10.4 mi long electrical transmission line supported on 85 to 100 double-circuit towers. Other improvements would include an on-site septic system, and paved and unpaved roads for site access.

The IVS project will require approvals from the State of California Energy Commission (CEC) for the power generation aspects of the project, and the BLM for siting and operating the project on BLM lands. In addition, other Federal, State and local agencies will be involved in aspects of project development and issuance of required permits.

1.2 Purpose of and Need for the Proposed Action

1.2.1 Bureau of Land Management Purpose of and Need for the Proposed Action

The National Environmental Policy Act (NEPA) implementing regulations published by the Council on Environmental Quality (CEQ) states that Purpose and Need section in an Environmental Impact Statement (EIS) "…shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 Code of Federal Regulations [CFR] Section 1502.13). The section discussion sets forth the purpose of, and need for, the project as required under NEPA.

The BLM's purpose and need for the IVS project is to respond to Imperial Valley Solar, LLC's application under Title V of the Federal Land Policy and Management Act (FLPMA; 43 United States Code [USC] 1701) for a right-of-way grant to construct, operate, maintain, and decommission a solar energy generation facility on public lands in compliance with FLPMA, BLM right-of-way regulations, and other applicable Federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a right-of-way grant to Imperial Valley Solar, LLC for the IVS project. The BLM's actions will also include consideration of concurrently amending the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended). The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not already identified in that plan be considered through the plan amendment process. If the BLM decides to approve the issuance of a right-of-way grant for the IVS project, the BLM will also amend the CDCA Plan as required to allow for that solar use on the project site.

In conjunction with FLPMA, BLM authorities include:

- Executive Order 13212 (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."

- The Energy Policy Act, Section 2211 of which states "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on public lands with a generation capacity of at least 10,000 megawatts of electricity."

- Secretarial Order 3285 (March 11, 2009) which "…establishes the development of renewable energy as a priority for the Department of the Interior."

1.2.2 Draft Section 404B-1 Alternatives Analysis Basic and Overall Project Purpose

The United States Army Corps of Engineers (Corps) is a cooperating agency with the BLM on this FEIS.

The Federal Clean Water Act (CWA) Section 404(b)(1) Guidelines (Guidelines) promulgated by the United States Environmental Protection Agency (EPA) explain that, when an action is subject to NEPA and the Corps is the permitting agency, the analysis of alternatives prepared for NEPA will in most cases provide the information needed for analysis under the Guidelines. The Guidelines also state that, in some cases, the NEPA document may have addressed "…a broader range of alternatives than required to be considered under [the Guidelines] or may not have considered alternatives in sufficient detail to respond to the details of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information." (40 CFR 230.10(a)(4)). In light of this statement in the Guidelines, and because the project purpose statement under NEPA and the Guidelines are not necessarily identical, the Corps has reviewed and refined the project purpose to ensure it meets the standards of the Guidelines.

For CWA Section 404 purposes, the Corps' *Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* (Ecosphere Environmental Consulting, July 13, 2010) provided in Appendix H provides the following statement of basic and overall project purpose:

> The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed action, and is used by the Corps to determine whether an applicant's project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site). The basic project purpose for the proposed action is "Energy Production." Although the basic project purpose is not water dependent, the project will not affect any special aquatic sites. Therefore, the rebuttal presumptions that there are less damaging alternatives for the proposed activity that would not affect special aquatic sites does not apply (40 CFR 230.10(a)(3)).

The overall project purpose is "To provide a solar energy facility ranging in size from approximately 300 MW to 750 MW in Imperial County, California."

1.2.3 Department of Energy Purpose and Need

The Energy Policy Act of 2005 established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of the Energy Policy Act 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 United States at the time the guarantee is issued." The two purposes of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for action by the United States Department of Energy (DOE) is to comply with its mandate under the Energy Policy Act by selecting eligible projects that meet the goals of that Act.

The DOE is a cooperating agency with the BLM on the FEIS.

1.3 Agency Roles and Authorizations

The California Energy Commission (CEC) has the exclusive authority to certify the construction, modification, and operation of electric power plants in California which would generate 50 or more megawatts of electricity. The CEC certification is in lieu of any permit required by state, regional, or local agencies to the extent permitted by Federal law (Public Resources Code (PRC), Section 25500). The CEC must review power plant Applications for Certification (AFCs) to assess potential environmental impacts including potential impacts to public health and safety, and potential measures to mitigate those impacts (PRC, Section 25519), and compliance with applicable governmental laws or standards (PRC, Section 25523 (d)). The CEC staff analyses regarding the IVS project were prepared in accordance with PRC, Section 25500 et seq.; Title 20, California Code of Regulations, Section 1701 et seq.; and the California Environmental Quality Act (CEQA, PRC, Section 21000 et seq.).

The BLM's authority for the proposed action includes the Federal Land Policy and Management Act (FLPMA) of 1976 (43 United States Code [USC] 1701 et seq.), Section 211 of the Energy Policy Act (119 Statutes 594, 600), and BLM's Solar Energy Development Policy (April 4, 2007). The FLPMA authorizes the BLM to issue right-of-way (ROW) grants for renewable energy projects. In addition, BLM's authority also extends to the BLM lands in the California Desert District which are governed by the CDCA Plan. Because the CDCA Plan would need to be amended to allow the IVS project on the project site, BLM would also oversee the CDCA amendment process.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Corps, to issue permits regulating the discharge of dredged or fill material into the waters of the United States (waters of the U.S.). Waters of the U.S. are broadly defined in 33 CFR Section 328.3(a)[1] to include navigable waters; perennial, intermittent, and ephemeral streams; lakes, rivers, ponds, wetlands, marshes, and wet meadows.

The United States National Park Service (NPS) is a cooperating agency with the BLM on the FEIS. As a cooperating agency, the NPS did not submit any alternatives to the proposed action under its jurisdiction.

1.4 Background on the Joint SA/DEIS

In August 2007, the CEC and the BLM California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. The purpose of the MOU is to avoid duplication of staff efforts, share staff expertise and information, promote intergovernmental coordination, and facilitate public review.

Consistent with that MOU, the CEC and the BLM prepared a joint environmental compliance document to address the requirements of CEQA and NEPA for the IVS project. Specifically, a Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was prepared and was circulated for agency and public review and comment between February 12, 2010 and May 28, 2010.

The BLM and the CEC prepared separate final documents for compliance with NEPA and CEQA, respectively.

The BLM is preparing a Final Environmental Impact Statement for the IVS project. The comments received on the SA/DEIS are addressed in this FEIS. After the publication of this FEIS, the BLM will prepare a Record of Decision (ROD) regarding the Agency Preferred

[1] This regulation, 33 CFR Section 328.3, and the definitions contained in that section, have been the subject of recent litigation. In addition, the United States Supreme Court recently addressed the scope and extent of the Corps' jurisdiction over "navigable waters" and "waters of the United States" under the CWA. *See, e.g., Solid Waste Agency of Northern Cook County versus United States Army Corps of Engineers,* 531 US 159 (2001); *Rapanos versus United States*, 126 Superior Court 2208 (2006). Despite the impact of these recent decisions, the definitions continue to provide guidance to the extent that they establish an outer limit for the extent of the Corps' jurisdiction over "waters of the United States," and, therefore, are referenced here for that purpose.

Alternative. The publication of the ROD in the Federal Register is the final step required of the BLM to meet the requirements of NEPA for the IVS project.

The CEC has a separate process for the consideration of the SA and AFC for the IVS project. Following the 90-day public comment period for the SA/DEIS, CEC staff will prepare a Supplemental SA (SSA) addressing any changes to the SA and/or the AFC for the IVS project. The SSA will be presented to the CEC for hearings and consideration of certification/approval of the AFC.

The SA/DEIS was the primary reference used in preparing this FEIS. The SA/DEIS is incorporated by reference in this FEIS.

1.5 Guide to the Final EIS

This FEIS contains the following sections:

- **Department of the Interior Letter:** This is the letter transmitting the FEIS to appropriate Federal and other agencies.
- **Abstract:** The abstract summarizes the proposed action and alternatives to the proposed action; the environmental impacts of the proposed action and the alternatives; and mitigation, project design features, best management practices, and other measures to address adverse impacts.
- **Section ES – Executive Summary:** This section briefly describes the background of the FEIS, the lead agencies roles and responsibilities, the project purpose and need, the proposed action, the alternatives to the proposed action, connected and cumulative actions, the affected environment, the FEIS conclusions, the impacts of the proposed action and the alternatives, the public participation for the environmental process, the Native American consultation process, and the comments received on the SA/DEIS and the responses to those comments.
- **Section 1 – Introduction and Purpose and Need:** This section provides an overview of the proposed action; describes the BLM purpose and need for the proposed action, and agency roles and authorizations; describes the Joint CEC SA/BLM DEIS process, provides a guide to the FEIS; describes the BLM Policies, Plans, and Programs relevant to the project and the FEIS; and describes other applicable plans and programs.

- **Section 2 – Alternatives Including the Proposed Action:** This section describes the construction, operation, and decommissioning of the proposed action and other Build Alternatives evaluated in detail in the FEIS; the three No Action Alternatives evaluated in detail in the FEIS; the three alternative sites not evaluated in detail in the FEIS; and other alternatives considered but eliminated from detailed analysis in the FEIS.

- **Section 3 – Affected Environment:** This section describes the existing setting on and in the vicinity of the project site related to air quality and climate; biological resources, non-native and invasive species; climate change; cultural resources and paleontology; energy; fire/fuels; geology, soils, topography, mineral resources, and seismic; grazing, and wild horses and burros; land use; noise and vibration; public health and safety, and hazardous materials; recreation; socioeconomics and environmental justice; special designations; traffic and transportation; visual resources; and water resources.

- **Section 4 – Environmental Consequences:** This section describes the methodology; defines the resources; identifies applicable regulations, plans, and policies/management goals for the impact analyses for the proposed action and the alternatives; and identifies mitigation, project design features, best management practices, and other measures to address those impacts, and summarizes the unavoidable adverse impacts for the following environmental parameters: air quality and climate; biological resources, non-native and invasive species; climate change; cultural resources and paleontology; energy; fire/fuels; geology, soils, topography, mineral resources, and seismic; grazing, and wild horses and burros; land use; noise and vibration; public health and safety, and hazardous materials; recreation; socioeconomics and environmental justice; special designations; traffic and transportation; visual resources; and water resources. This section also discusses cumulative effects, irreversible and irretrievable commitment of resources, growth inducing impacts, and short-term versus long-term productivity of the environment, and summarizes all the unavoidable adverse impacts of the proposed action.

- **Section 5 – Consultation, Coordination, and Public Participation:** This section describes the BLM scoping process for the proposed action, and the organizations and persons consulted; and provides a summary of the comments received on the SA/DEIS.

- **Section 6 – Monitoring and Compliance:** This section describes the purpose and scope of BLM monitoring compliance with the project measures during project

construction, operations, and decommissioning and how that compliance with be documented by the BLM.

- **Section 7 - Native American Consultation, Concerns, and Values**: This section discusses the Native American consultation conducted by the BLM and summarizes the specific concerns about the project and values related to the project site and area raised to the BLM by the Native American representatives during that consultation process.

- **Section 8 – List of Preparers:** This section lists the BLM, applicant, and consultant staff who participated in the preparation of the FEIS.

- **Section 9 – References:** This section lists the primary references used in the preparation of the FEIS.

- **Section 10 – Index:** This sections list key words and terms used in the FEIS and indicates the pages where those words/terms are used.

- **Section 11 – Glossary:** This section provides a glossary of key terms used in the FEIS.

- **Appendices:** The following appendices provide additional information in support of the analysis and documentation provided in this FEIS:

  - **Appendix A: Figures**

  - **Appendix B: Determination of NEPA Adequacy**

  - **Appendix C: Scoping Report:** This is provided on a compact disc bound in this volume as Appendix C.

  - **Appendix D: Comments on the Draft Environmental Impact Statement**

  - **Appendix E**: **Seeley Wastewater Treatment Plant Improvements**

  - **Appendix F: Documentation of Tribal Consultation**

  - **Appendix G: Draft Programmatic Agreement**

  - **Appendix H: Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project**

- **Appendix I: Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative**

1.6 Policy Consistency and Plan Conformance

Projects requiring Federal action or other Federal involvement require compliance with NEPA and the CEQ Regulations for Implementing NEPA (Parts 1500 to 1508). NEPA specifically requires each Federal agency to review the effects of a proposed project on the natural and human environments before taking any action concerning that project. The SA/DEIS and this FEIS document BLM's compliance with the requirements of NEPA for the IVS project.

In addition to compliance with NEPA, the IVS project is subject to requirements for consistency and conformance with a number of other applicable Federal laws and regulations and BLM policies and programs. Table 1-1 summarizes the Federal statutes; regulations; Executive Orders (EOs); and plans relevant to the IVS project by environmental parameter, briefly describes them, and indicates where in the FEIS those individual environmental parameters are evaluated for consistency and conformance with those statutes, regulations, EOs, and plans.

In addition to the primary statutes, regulations, EOs, and plans listed in Table 1-1, there are a number of other Federal statutes, regulations, EOs, and plans that will also apply to the IVS project. Those other documents are listed in detail throughout Section C in the SA/DEIS, in tables titled "Laws, Ordinances, Regulations, and Standards." Section 4.0, Environmental Consequences also includes discussions of statutes, regulations, EOs, and plans relevant to the analysis of the potential environmental impacts of the IVS project.

1.7 Other Applicable Plans and Programs

In addition to the Federal statutes, regulations, EOs, and plans described above and in Table 1-1, there are also a number of State and local laws, plans, and programs that could apply to the IVS project. Those other documents are listed in detail throughout Section C in the SA/DEIS, in tables titled "Laws, Ordinances, Regulations, and Standards." The primary State and Local documents that would be applicable to the IVS project are described briefly below.

Table 1-1 Summary of Federal Statutes, Regulations, Executive Orders, and Plans

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
GENERAL		
Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA) (Parts 1500–1508)	CEQ Regulations for implementing NEPA.	Throughout the Final Environmental Impact Statement (FEIS)
Federal Land Policy and Management Act (FLPMA) of 1976, as amended (43 United States Code [USC] 1701 et seq.)	FLPMA provides the mandate to the United States Bureau of Land Management (BLM) for the management of public lands and resources under its stewardship under the principles of multiple use, sustained yield, and maintenance of environmental quality. FLPMA requires the United States Secretary of the Interior to retain and maintain public lands and authorizes the BLM to manage public lands to protect the quality, scientific, scenic, historical, archeological, and other values of those lands. It further authorizes the BLM to develop regulations and plans for the protection of public land areas of critical environmental concern, including important historic, cultural or scenic values.	Throughout Sections 3.0 and 4.0
California Desert Conservation Area Plan (CDCA Plan), 1980, as amended	The development of this plan was mandated as part of the FLPMA. The CDCA Plan is a comprehensive, long-range plan for the management, use, development, and protection of the public lands in the California Desert Conservation Area. The plan covers approximately 25 million acres (ac) of land in California, of which about 10 million ac are directly administered by the BLM. The site proposed for the Imperial Valley Solar (IVS) project is in an area administered by the BLM. The CDCA includes parts of the following deserts: Mojave, Sonoran, and a small part of the Great Basin. The CDCA Plan is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each plan elements provide both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.	Throughout Sections 3.0 and 4.0

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
AIR QUALITY		
Clean Air Act (CAA), as amended (42 USC 7401 et seq.)	The CAA regulates air emissions and pollutants from area, stationary, and mobile sources to improve air quality. The CAA authorized the United States Environmental Protection Agency (EPA) to establish national ambient air quality standards to protect public health and the environment.	Sections 3.2 and 4.2, Air Quality
BIOLOGICAL RESOURCES AND NONNATIVE AND INVASIVE SPECIES		
Federal Endangered Species Act (FESA) of 1973, as amended (16 USC 1531 et seq. and 50 Code of Federal Regulations [CFR] 17.1 et seq.)	The FESA provides for the protection of threatened plants, insects, fish, and wildlife. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) administer the FESA. The FESA provides for the listing of threatened and endangered species, requires consultation with the USFWS and/or the NMFS, as appropriate, for Federal actions, prohibits the taking of listed threatened and endangered species, and provides for permits to allow the incidental taking of threatened and endangered species.	Sections 3.3 and 4.3, Biological Resources
Executive Order (EO) 13112, Invasive Species, 2/3/99	This EO requires Federal agencies to take actions to prevent the introduction and spread of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts of invasive species.	Sections 3.3 and 4.3, Biological Resources
Lacey Act, as amended (16 USC 3371-3378)	This Act protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport or sale of protected species.	Sections 3.3 and 4.3, Biological Resources
Federal Noxious Weed Act of 1974, as amended	This Act established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture is authorized to designate plants as noxious weeds. The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.	Sections 3.3 and 4.3, Biological Resources
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 1/10/01, and the Migratory Bird Treaty Act (MBTA; 16 USC 703 to 711)	The MBTA makes it unlawful to take or posses any migratory nongame bird or any part of such bird as designated in the MBTA.	Sections 3.3 and 4.3, Biological Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
CDCA Plan – Wildlife and Vegetation Elements	These elements establish goals and identify management tools addressing the avoidance, mitigation and/or compensation of impacts to wildlife populations and habitats; as well as simultaneously maintain vegetative productivity for consumptive needs and stabilize/improve conditions populations of plant species appearing on the State and Federal lists of threatened and endangered species.	Sections 3.3 and 4.3, Biological Resources
Flat-tailed Horned Lizard (FTHL) Rangewide Management Strategy (2003)	The plan provides guidance for the conservation and management of sufficient habitat to maintain viable populations of the FTHL.	Sections 3.3 and 4.3, Biological Resources
CLIMATE CHANGE		
Mandatory Reporting of GHGs	The CEQ issued draft guidance on February 10, 2010, that requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) emissions per year.	Sections 3.4 and 4.4, Climate Change
Council on Environmental Quality, "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions" (February 18, 2010)	Draft guidance on ways in which Federal agencies can improve their consideration of the effects of greenhouse gas emissions in the evaluation of proposals under NEPA.	Sections 3.4 and 4.4, Climate Change
CULTURAL AND PALEONTOLOGICAL RESOURCES		
National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470)	The NHPA provided for the establishment of the National Register of Historic Places (National Register) to include historic properties that are significant in American history, architecture, archeology, and culture. Section 106 of the NHPA requires Federal agencies to take into account the effect of a proposed undertaking on resources listed or eligible for listing on the National Register.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
American Indian Religious Freedom Act of 1978 (42 USC 1996)	This Act is intended to protect Native American religious practices, ethnic heritage sites, and land uses.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 11593 Protection and Enhancement of the Cultural Environment 5/6/71	This EO identified several actions required of Federal agencies to contribute to the protection and enhancement of the cultural environment.	Sections 3.5 and 4.5, Cultural and Paleontological Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
Native American Graves Protection and Repatriation Act (1990); Title 25, USC Section 3001, et seq.,	The stature defines "cultural items," "sacred objects," and "objects of cultural patrimony;" establishes an ownership hierarchy; provides for review; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for the return of specified cultural items.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
Archaeological Resources Protection Act of 1979	The purpose of this Act is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
Paleontological Resources Preservation Act	Provides for the protection of paleontological resources on Federal lands.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 13007 Indian Sacred Sites	The Agency must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 13175 Consultation and Coordination With Indian Tribal Governments	This EO mandates regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 13287 Preserve America	This EO mandates that the Federal Government actively advance the protection, enhancement, and contemporary use of the historic properties owned by the Federal Government.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
CDCA Plan – Cultural Resources Element Goals	The CDCA Plan contains the following goals related to cultural resources: 1. Broaden the archaeological and historical knowledge of the CDCA through continuing efforts and the use of existing data. Continue the effort to identify the full array of the CDCA's cultural resources. 2. Preserve and protect representative sample of the full array of the CDCA's cultural resources. 3. Ensure that cultural resources are given full consideration in land use planning and management decisions, and ensure that BLM-authorized actions avoid inadvertent impacts.	Sections 3.5 and 4.5, Cultural and Paleontological Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
	4. Ensure proper data recovery of significant (National Register quality) cultural resources where adverse impacts can be avoided.	
Antiquities Act of 1906 (16 USC 431-433)	Although there is no specific mention of natural or paleontological resources in the Act or in the Act's uniform rules and regulations (43 CFR Part 3), the term "…objects of antiquity…" has been interpreted to include fossils in the Federal Highways Act of 1956, and by the National Park Service (NPS), the BLM, the United States Forest Service (USFS), and other Federal agencies.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
Paleontologic Resources Preservation Act (PRPA) (Public Law [PL] 111-011)	The PRPA authorizes the Secretaries of the United States Departments of Interior and Agriculture to manage the protection of paleontological resources on Federal lands.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
FIRE/FUELS		
CDCA Plan, 1980, as amended	The Multiple-Use Class Guidelines in the CDCA Plan address fire management in Table 1, Multiple Class Guidelines.	Sections 3.6 and 4.6, Fire and Fuels Management
GRAZING, AND WILD HORSES AND BURROS		
Public Rangelands Improvement Act (PRIA) 1978	The PRIA established and reaffirmed the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; and continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves, their habitat, and to other rangeland values.	Sections 3.8 and 4.8, Grazing, and Wild Horses and Burros
Wild Free-Roaming Horses and Burros Act (1971)	This Act authorizes the BLM to protect, manage, and control wild horses and burros to ensure that healthy herds thrive on healthy rangelands. The BLM manages these animals as part of its multiple-use mission under the 1976 FLPMA. A key BLM responsibility under this Act is to determine the appropriate management level of wild horses and burros on public rangelands.	Sections 3.8 and 4.8, Grazing, and Wild Horses and Burros

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
LAND USE		
FLPMA	The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. The FLPMA specifically establishes BLM's authority to grant rights-of-way for the generation, transmission, and distribution of electrical energy.	Sections 3.9 and 4.9, Land Use and Corridor Analysis
CDCA Plan	The IVS project will require an amendment to the CDCA Plan to allow for solar generation of electricity on the project site.	Sections 3.9 and 4.9, Land Use and Corridor Analysis
Yuha Desert Management Plan (YDMP) 1985	The BLM YDMP establishes goals and planned actions designed to meet the goals of the CDCA Plan. They emphasize the protection of wildlife and cultural resource values while permitting a compatible level of competitive vehicle use and energy development.	Sections 3.9 and 4.9, Land Use and Corridor Analysis
NOISE AND VIBRATION		
Occupational Safety and Health Administration 29 USC 651 et seq.	This regulation protects workers from the effects of occupational noise exposure.	Sections 3.10 and 4.10, Noise and Vibration
PUBLIC HEALTH AND SAFETY, AND HAZARDOUS MATERIALS		
Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC 6901 et seq.)	RCRA gives the EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials
The Superfund Amendments and Reauthorization Act (SARA) of 1986 (42 USC 9601 et seq.)	This Act includes the Emergency Planning and Community Right to Know Act (also known as SARA Title III).	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials
CAA	The CAA established a nationwide emergency planning and response program, and imposes reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials. The CAA requires new sources that emit more than 10 tons per year (tons/yr) of any specified Hazardous Air Pollutant (HAP) or more than 25 tons/yr of any combination of HAPs to apply Maximum Achievable Control Technology.	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 19809 as amended (42 USC 9615)	CERCLA provides for the cleanup of sites contaminated by hazardous substances. It authorizes the Federal government to clean up sites using the Hazardous Substance Superfund. It imposes liability for cleanup on responsible parties and requires them to perform the cleanup, reimburse others for their cleanup expenses or reimburse the Fund when the Fund is used to pay for cleanup. CERCLA requires that responsible parties pay damages to the Federal, state, or tribal government for the destruction or loss of, or injury to, natural resources.	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials
49 CFR Sections 350 to 399 and Appendices A to G	This regulation provides procedures and directions pertaining to interstate and intrastate transport including hazardous materials program procedures and provides safety measures for motor carriers and motor vehicles who operate on public highways.	Sections 3.15 and 4.15, Traffic and Transportation
RECREATION		
CDCA Plan 1980, as amended	The CDCA Plan contains a detailed Recreation Element which addresses recreation resources and uses.	Sections 3.12 and 4.12, Recreation
SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE		
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations 2/11/94	This EO directs each Federal agency to achieve environmental justice as part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.	Sections 3.13 and 4.13, Socioeconomics and Environmental Justice
Emergency Economic Stabilization Act of 2008 (Public Law 110-343) Business Solar Investment Tax Credit (Internal Revenue Code Section 48)	This Act extended the 30 percent investment tax credit (ITC) for solar energy property for eight years through December 31, 2016. The Act allows the ITC to be used to offset both regular and alternative minimum tax (AMT) and waives the public utility exception of current law (i.e., permits utilities to directly invest in solar facilities and claim the ITC). The 5-year accelerated depreciation allowance for solar property is permanent and unaffected by passage of the 8-year extension of the solar ITC.	Sections 3.13 and 4.13, Socioeconomics and Environmental Justice
American Recovery and Reinvestment Act of 2009	The goals of this Act are to create new jobs and save existing jobs, spur economic activity and invest in long-term growth, and foster unprecedented levels of accountability and transparency in government spending.	Sections 3.13 and 4.13, Socioeconomics and Environmental Justice
SPECIAL DESIGNATIONS (Wilderness Characteristics, Areas of Critical Environmental Concern, Prime and Unique Farmlands, National Scenic and Historic Trails, National Wild and Scenic Rivers, and Donated Lands)		
Wild and Scenic Rivers Act as amended (16 USC 1271)	This Act addresses designated wild and scenic rivers. There are no wild and scenic rivers on or in the vicinity of the project site and they are not discussed in the FEIS.	Sections 3.14 and 4.14, Special Designations

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
Wilderness Action of 1964 (16 USC 1131-1136, Statute 890)	This Act directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System. The Act provides criteria for determining suitability and establishes restrictions on activities that can be undertaken on a designated area.	Sections 3.14 and 4.14, Special Designations
Omnibus Public Land Management Act of 2009 (House of Representatives 146/Public Law 111-011)	This Act designates certain land as components of the National Wilderness Preservation System, and authorizes certain programs and activities in the Departments of the Interior and Agriculture.	Sections 3.14 and 4.14, Special Designations
Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)	This addresses the protection of Prime and Unique Farmlands.	Sections 3.14 and 4.14, Special Designations
Farmland Protection Policy Act (FPPA), Subtitle I of Title XV, Section 1539-1549 of the Agriculture and Food Act of 1981	The FPPA is intended to minimize the impact of Federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that, to the extent possible, Federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and farmland of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.	Sections 3.14 and 4.14, Special Designations
CDCA Plan	Chapter 4, Areas of Critical Environmental Concerns and Special Areas, of the CDCA Plan establishes goals to identify and protect natural and cultural resources, and identifies management prescriptions for specific geographic areas containing such resources. There are no donated lands on or in the vicinity of the project site and they are not discussed in this FEIS.	Sections 3.14 and 4.14, Special Designations

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
TRAFFIC AND TRANSPORTATION		
49 CFR 171 to 177 and 350 to 399	The regulation governs the transportation of hazardous materials and related guidelines.	Sections 3.15 and 4.15, Traffic and Transportation
77 CFR Federal Aviation Administration (FAA) Regulations	This regulation implements standards for determining obstructions in navigable airspace, sets forth requirements for notice to the FAA of certain proposed construction or alteration activities, and provides for aeronautical studies of obstructions to air navigation to determine their effects on the safe and efficient use of airspace.	Sections 3.15 and 4.15, Traffic and Transportation
VISUAL RESOURCES		
FLPMA	Section 103(c) identifies scenic values as one of the resources for which public land should be managed as required by the FLPMA. Section 201(a) states that "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including ... scenic values)…" Section 505(a) requires that "Each right-of-way shall contain terms and conditions which will…minimize damage to the scenic and esthetic values…"	Sections 3.16 and 4.16, Visual Resources
CDCA Plan	The CDCA Plan is the Resource Management Plan (RMP) for the project site and the surrounding area as required under FLPMA. The CDCA Plan does not have Visual Resource Mapping (VRM) for the project site or anywhere in the CDCA. The IVS project site is classified in the CDCA Plan as Multiple-Use Class (MUC) L (Limited Use). MUC L, the most restrictive under the plan, "…protects sensitive, natural, scenic, ecological, and cultural resource values." Public lands designated Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. Under the CDCA Plan, electrical power generation facilities including wind/solar facilities may be allowed within MUC L if the NEPA requirements for that proposed use are met.	Sections 3.16 and 4.16, Visual Resources
NHPA	Under the NHPA, visual impacts to a listed or eligible National Register property that may diminish the integrity of the property's "…setting… (or) feeling…" in a way that affects the property's eligibility for listing, may result in a potentially significant adverse effect. "Examples of adverse effects…include…Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features…"	Sections 3.16 and 4.16, Visual Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
WATER RESOURCES		
Clean Water Act (CWA, 33 USC 1251 et seq.)	The CWA requires states to set standards to protect water quality, including regulation of storm water and wastewater discharges during construction and operation of a facility. California's regulations to comply with the CWA are in the Porter-Cologne Water Quality Control Act of 1967. Sections 401 and 404 of the CWA establish protection of waters of the United States such as perennial and ephemeral drainages, streams, washes, ponds, pools, and wetlands. Section 401 requires that any activity which may result in a discharge into waters of the United States must be certified by the California State Water Resources Control Board (SWRCB) as administered by the Regional Water Quality Control Boards (RWQCBs). This certification ensures that the proposed activity does not violate State and/or Federal water quality standards. The site for the IVS project is within the jurisdiction of the Colorado River RWQCB. Section 404 authorizes the United States Army Corps of Engineers (Corps) to regulate the discharge of dredged or fill material to waters of the United States. The Corps issues individual site-specific or general (nationwide) permits for such discharges. Section 404 Permits are not granted without prior 401 certification. Section 303(d) of the CWA requires states to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs) to improve water quality. Section 311 prohibits the discharge of oil or hazardous materials to waters of the United States.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
EPA Section 404(b)(1) Guidelines (40 CFR 230 et seq.)	Section 404(b)(1) requires the Corps to analyze alternatives to consider the avoidance and minimization of impacts to the extent practicable to determine whether a proposed discharge to waters of the United States can be authorized.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
EO 11990 Protection of Wetlands 5/24/77 (42 Federal Register 26961)	This Act directs each Federal agency to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out its responsibilities.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
EO 11988, Floodplain Management, as amended, 5/24/77	This Act requires each Federal agency to avoid, to the extent possible, impacts associated with the occupancy and modification of floodplains and to avoid supporting floodplain development when there is a practicable alternative.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
Safe Drinking Water Act Amendments of 1996	This Act and its Amendments emphasize preventing contamination through source water protection and enhanced water system management to better provide for the sustainable use of water by our nation's public water systems.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
EO 12088, Federal Compliance with Pollution Control Standards (amended by EO 12580, Superfund Implementation) 10/13/78, 2/23/87	These Acts require each Federal agency to ensure that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010) and LSA Associates, Inc. (2010).

1.7.1 State

- **Renewables Portfolio Standard Program:** This State law requires investor-owned utilities to obtain 20 percent of the power supplied to their customers to be generated from renewable sources by 2010. Renewable energy sources include wind, geothermal, and solar.

- **California Global Warming Solutions Act of 2006, AB 32 (Statutes 2006; Chapter 488; Health and Safety Code Sections 38500 et seq.).** This act requires the ARB to enact standards that will reduce GHG emissions to 1990 levels by 2020. Electricity production facilities are regulated by the ARB.

- **Title 17 CCR, Subchapter 10, Article 2, Sections 95100 et seq.** These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006.

- **Title 20, CCR, Section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009.** These regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a GHG emission standard of 0.5 $MTCO_2$/MWh or 1,100 lbs CO_2/MWh.

- **EO S-13-08.** Directs a number of state agencies to address California's vulnerability to sea level rise caused by climate change.

1.7.2 Local

- **Imperial County General Plan (1993):** The General Plan provides guidance on future growth in Imperial County. Any development in Imperial County must be consistent with the General Plan and the Imperial County Land Use Ordinance (Title 9, Division 10). The BLM-managed lands within the boundary of the IVS project site are not subject to the requirements of the General Plan because the BLM is a Federal agency. However, BLM regulations require that resource management plans be consistent with local governments' officially approved resource related plans (43 CFR 1610.3-2).

- Applicable rules and other requirements of the Imperial County Air Pollution Control District.

1.7.3 State Implementation Plan for PM_{10} in the Imperial Valley 1993

There are currently three State Implementation Plans (SIPs) under review in Imperial County, for ozone (O_3), emissions controls, and particulate matter less than 10 microns in aerodynamic diameter (PM_{10}). The status of each of those is described below.

1.7.3.1 Ozone State Implementation Plan

On December 3, 2009 the United State Environmental Protection Agency (EPA) issued a final ruling[1] determining that the Imperial County "moderate" 8-hour O_3 nonattainment area attained the 1997 8-hour standard. This determination effectively suspends the requirement for the State to submit an attainment demonstration, a reasonable further progress plan, contingency measures, and other planning requirements for long as Imperial County continues to attain the 1997 8-hour O_3 standard.

Because this determination does not constitute a re-designation to attainment under the Clean Air Act Section 107(d)(3) the designation status will remain "moderate" non-attainment for the 1997 8-hour ozone standard.

However, Imperial County is required to submit for EPA approval a "Modified" 2009 8-hour Ozone Air Quality Management Plan.

1.7.3.2 Reasonably Available Control Technology State Implementation Plan

The Federal Clean Air Act (CAA) requires SIPs for nonattainment areas to require emission controls that are economically and technologically feasible. Emissions control technologies that meet these criteria are known as Reasonably Available Control Technology (RACT). The Phase 2 rule sets forth guidelines for making RACT determinations in 8-hour O_3 nonattainment areas (70 Federal Register 71612).

1.7.3.3 Particulate Matter Less than 10 Microns in Aerodynamic Diameter (PM_{10}) SIP

On August 11, 2009, the ICAPCD Board held a public hearing and unanimously adopted the Imperial County 2009 PM_{10} SIP. The Board's action included:

[1] http://imperialcounty.net/AirPollution/Attainment%20Plans/EPA%20Final%20Rule%20Clean%20Data%201997%20Standard.pdf.

- Approval and adoption of the Draft Final Imperial County 2009 PM_{10} SIP (dated July 10, 2009), with changes as specified in the July 31, 2009 Errata Sheet;
- Adoption of the findings in the associated Staff Report;
- Certification of the Negative Declaration for the 2009 PM_{10} SIP;
- Adoption of the transportation conformity budgets in the Imperial County 2009 PM_{10} SIP, and
- Direction to staff to submit the Imperial County PM_{10} SIP and related documents to the California Air Resources Board for their review and action.

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Chapter 2
Alternatives Including the Proposed Action

2.1 Overview of Alternatives Development

2.1.1 Alternatives Evaluated in the Staff Assessment/Draft Environmental Impact Statement

In addition to the Imperial Valley Solar (IVS) project (Proposed Action), 27 alternatives were developed for consideration in the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS). These included 8 alternative sites; 3 alternatives that would reduce effects to jurisdictional waters of the United States; a range of solar and renewable technologies, generation technologies using different fuels, conservation/demand-side management; and a 300-megawatt (MW) alternative to the proposed 750 MW IVS project.

The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the SA/DEIS in February 2010.

Of the 27 alternatives, three Build Alternatives were carried forward by the California Energy Commission (CEC) and the United States Bureau of Land Management (BLM) for detailed evaluation in the SA/DEIS because they are feasible:

- 300 MW Alternative
- Drainage Avoidance #1 Alternative
- Drainage Avoidance #2 Alternative

As described below, three No Action Alternatives (two of which are referenced as Land Use Plan Amendment Alternatives) were developed to consider different combinations of BLM actions related to the right-of-way (ROW) grant for the IVS project and amendments to the *California Desert Conservation Area Plan* (CDCA Plan; 1980, as amended).

The SA/DEIS evaluated the following seven alternatives in detail:

- **IVS Project: 750 MW Alternative.** The IVS project is the proposed action evaluated in detail in the SA/DEIS. It would generate 750 MW of electricity using 30,000 SunCatchers on a total of approximately 6,500 acres (ac) of land. The IVS project is proposed to be constructed in two phases, with Phase I generating 300 MW of electricity and Phase II generating an additional 450 MW of electricity

- **300 MW Alternative.** The 300 MW Alternative would generate 300 MW of electricity using 12,000 SunCatchers on approximately 2,600 ac of the total IVS project site. The 300 MW Alternative would generate 40 percent of the megawatts of the IVS project, on about 40 percent of the site used by the IVS project, with 40 percent of the total SunCatchers as the IVS project. The 300 MW Alternative would be equivalent to Phase I of the IVS project.

- **Drainage Avoidance #1 Alternative.** The Drainage Avoidance #1 Alternative was developed in consultation with the United States Army Corps of Engineers (Corps) to avoid certain drainages on the IVS project site. The Drainage Avoidance #1 Alternative would generate 632 MW of electricity using 25,000 SunCatchers on approximately 4,690 ac of the total IVS project site. The Drainage Avoidance #1 Alternative would generate 83 percent of the MW of the IVS project, on approximately 72 percent of the site, with 83 percent of the SunCatchers of the IVS project.

- **Drainage Avoidance #2 Alternative.** The Drainage Avoidance #2 Alternative was also developed in consultation with the Corps to avoid certain drainages on the project site. The Drainage Avoidance #2 Alternative would generate 423 MW of electricity using 10,240 SunCatchers on approximately 3,153 ac of the total IVS project site. The Drainage Avoidance #2 Alternative would generate 56 percent of the MW of the IVS project, on approximately 49 percent of the site, with 42 percent of the SunCatchers of the IVS project.

- **No Action Alternative: No ROW Grant and No CDCA Plan Amendment.** Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant application and would not amend the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the IVS project site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, the site would be available for other uses that are consistent

with the CDCA Plan and, in the absence of the IVS project, other renewable energy projects may be constructed in other locations to meet State and Federal mandates.

- **Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar.** Under this No Action Alternative, the BLM would not approve the ROW grant application and would amend the CDCA Plan to make the IVS project site unavailable for future solar development. This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site unavailable for further solar development. Because the CDCA Plan would be amended under this No Action Alternative to make the IVS project site unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, in the absence of the IVS project or another solar project on the site, other renewable energy projects may be constructed in other locations to meet State and Federal mandates.

- **Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar.** Under this No Action Alternative, the BLM would not approve the ROW grant application and would amend the CDCA Plan to make the IVS project site available for future solar development. This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site available for further solar development. Because the CDCA Plan would be amended under this No Action Alternative, it is possible that the site would be developed with the same or a different solar technology in the future.

The remaining alternatives fall into in two categories:

- Alternative sites that were evaluated under the California Environmental Quality Act (CEQA) and Section 404 of the Federal Clean Water Act (CWA) and not under the National Environmental Policy Act (NEPA) because they would require no action by the BLM and were determined not to be reasonable as described later in Section 2.9, Alternatives Considered but Eliminated from Detailed Analysis.

- Other alternative sites and various technologies that were considered but eliminated from detailed analysis

2.1.2 Applicant Proposed Modifications to the Alternatives after the Staff Assessment/Draft Environmental Impact Statement

After the SA/DEIS was released for public review in February 2010, the applicant proposed the following four modifications/refinements to the IVS project and the other Build Alternatives:

- **Transmission Line Alignment Modifications:** Modifications to the original transmission line alignment include shifting 2 segments of the transmission line. The western transmission line alignment modification would occur over a 750-foot (ft) long span and would be shifted approximately 120 ft southeast of the original alignment. The second segment modification north of the Imperial Valley SDG&E Substation would occur over a 1,025-ft long span with the transmission line shifted approximately 300 ft east of the original alignment.

- **Waterline Alignment Modifications:** The waterline alignment was modified slightly to follow the Evan Hewes Highway ROW where feasible. The waterline realignments would occur on two segments. The western modification would occur over a 300-ft long span and the eastern modification would occur over a 160-ft long span.

- **Hydrogen Storage Modifications:** The IVS project includes a centralized hydrogen gas supply, storage, and distribution system. Modifications proposed to this system would require the amount of hydrogen stored for each SunCatcher to be increased from 3.4 to 11 standard cubic feet (scf). To support this increase in hydrogen storage for each SunCatcher, the high pressure supply tanks and low pressure dump tanks at each compressor group would accommodate 29,333 scf and 9,900 scf, respectively. In addition, each of the 30 high pressure tanks that supply hydrogen to the power conversion unit (PCU) within a group of 12 SunCatchers will have a capacity of 489 scf.

- **Alternative Water Supply Modifications:** The water supply for the IVS project was anticipated to be supplied by the Seeley County Water District (SCWD) which was expected to provide secondary treated water from its Seeley Wastewater Treatment Plant (SWWTP) to the IVS project site. Although the SWWTP would be able to supply water for the IVS project in the long term, the construction of the SWWTP improvements to ensure that water obtained for the IVS project does not exceed

effluent limits may not be completed by the time the IVS project construction and early operation come online. In the event that the SWWTP improvements have not been completed at the start of construction of the IVS project, the applicant proposes to use a temporary, alternative water supply until SWWTP water is available.

This alternative water supply would be provided from an existing, permitted well through the Dan Boyer Water Company in Ocotillo. That water source is potable and permitted for use by construction or personal consumption. It is expected that the Build Alternatives would require this temporary water supply for between 6 months and 3 years. Water would be transported from the well to the IVS project site in 7,000 gallon (gal) water trucks. It is anticipated that up to 13 round-trip truck trips per day would be required during construction and up to 7 round-trip truck trips per day would be required during operation until SWWTP water can be used.

These applicant proposed modifications were incorporated in the IVS project, the 300 MW Alternative, Drainage Avoidance #1 Alternative, and Drainage Avoidance #2 Alternative. Because these modifications to these Build Alternatives could potentially result in environmental concerns that were not analyzed in the SA/DEIS, and may result in more, not fewer, environmental impacts, the potential effects of these modifications were evaluated in detail in the Determination of NEPA Adequacy (DNA) provided in Appendix B, Determination of NEPA Adequacy (DNA). Although not required, the BLM has chosen to use a DNA in this case as an internal administrative tool to determine whether a supplement to the DEIS is required as a result of the four applicant proposed modifications described above. The BLM has determined that no supplement is required because the applicant-proposed modifications are similar to features of previously analyzed alternatives, result in an alternative within the range of the alternatives analyzed previously, do not substantially change the previous analysis, and have effects that are similar to or less than those analyzed for the IVS project and the other Build Alternatives. The potential effects of these four modifications are presented in the analyses provided in this Final Environmental Impact Statement (FEIS) and are summarized in the DNA.

2.1.3 Agency Preferred Alternative (709 MW Alternative)

After the release of the SA/DEIS for public review in February 2010, the BLM and the Corps continued to coordinate and consult regarding possible refinements to avoid specific drainages on the IVS project site. The following modifications to the IVS project, to reduce effects to aquatic resources, the flat tailed horned lizard (FTHL), and cultural resources, were identified in that continued consultation:

- Relocating the Main Services Complex out of some of the primary wash segments of Drainage E

- Removing all SunCatchers within 100 ft of the centerline of Drainage E to provide a 200-ft wide corridor along this drainage through the site

As a result of these modifications to the IVS project, the following specific changes were made to that Alternative, which resulted in a 709 MW Alternative, which has been identified by the BLM as the Agency Preferred Alternative:

- Reduction in the total number of SunCatchers from 30,000 to 28,360 SunCatchers
- Reduction in the amount of energy generated from 750 MW to 709 MW

The 709 MW Alternative would be on the same approximately 6,500 ac site as the IVS project, except that areas within the site, particularly along Drainage E, would avoided and no project construction or structures would occur in those areas.

Although the BLM did not anticipate this alternative in the DEIS, the BLM has determined that the 709 MW Agency Preferred Alternative is essentially similar to the 750 MW proposed action analyzed in the DEIS in that both alternatives would be on the same site and would be constructed and operated nearly identically. The BLM has determined that the findings of the DNA analyses regarding the applicant's four modifications to the Build Alternatives, which are included in the 709 MW Alternative, and the modifications associated with Drainage E, which are included only in the 709 MW Alternative, are not significantly different than the findings of the analyses in the DEIS for the 750 MW Alternative. For further discussion and evaluation regarding the 709 MW Alternative, refer to Chapter 4, Environmental Consequences, and Appendix B.

The Agency Preferred Alternative is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) as discussed in the *Draft 404B-1 Alternatives Analysis for the Imperial Valley Solar Project*, which is provided in Appendix H, Draft Section 404B-1 Alternatives Analysis for the IVS project. The Corps is currently in the process of a detailed evaluation of that analysis along with the EPA. A Final 404(b)(1) Alternatives Analysis and LEDPA determination will be included as part of the Corps' Record of Decision (ROD).

2.1.4 Alternatives Evaluated in the Final Environmental Impact Statement

The alternatives considered in detail in this FEIS are summarized in Table 2-1 and are described in Sections 2.2 to 2.6, below. Additional detail regarding the IVS project and the other alternatives is provided in the SA/DEIS and in the Plan of Development (POD, June 2010).

Table 2-1 Summary of Alternatives Evaluated in Detail in the FEIS

Alternative	Comments
IVS Project: 750 MW Alternative 750 MW 6,500 ac (6,144 ac BLM managed and 332 ac privately owned) 30,000 SunCatchers	This is the IVS project and was the original proposed action. This Alternative meets the BLM project purpose and need.
709 MW Alternative: Agency Preferred Alternative 709 MW 6,500 ac (6,144 ac BLM managed and 332 ac privately owned) 28,360 SunCatchers	This is the BLM Agency Preferred Alternative. It is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative.
300 MW Alternative 300 MW (40% of the megawatts of the IVS project) 2,600 ac (40% of the acreage of the IVS project) 12,000 SunCatchers (40% of the IVS project)	This is a reduced project using the same SunCatcher technology as the IVS project. This Alternative meets the BLM project purpose and need.
Drainage Avoidance #1 Alternative 632 MW (83% of the megawatts of the IVS project) 4,690 ac (72% of the acreage of the proposed action) 25,000 SunCatchers (83% of the IVS project)	This is a reduced project using the same SunCatcher technology as the IVS project. This alternative was developed in consultation with the Corps to avoid drainages on the project site. This Alternative meets the BLM project purpose and need.
Drainage Avoidance #2 Alternative 423 MW (56% of the megawatts of the IVS project) 3,153 ac (49% of the acreage of the proposed action) 10,240 SunCatchers (42% of the IVS project)	This is a reduced project using the same SunCatcher technology as the IVS project. This alternative was developed in consultation with the Corps to avoid drainages on the project site. This Alternative meets the BLM project purpose and need.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment BLM does not approve the ROW grant for the IVS project. BLM does not amend the CDCA Plan.	This No Action Alternative was evaluated in the SA/DEIS under both CEQA and NEPA.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar BLM does not approve the ROW grant for the IVS project. BLM amends the CDCA Plan to make the project site unavailable for future solar development.	This Land Use Plan Amendment Alternative was evaluated in the SA/DEIS under NEPA only. This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site unavailable for further solar development.

Alternative	Comments
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar BLM does not approve the ROW grant for the IVS project. BLM amends the CDCA Plan to make the project site available for future solar development.	This Land Use Plan Amendment Alternative was evaluated in the SA/DEIS under NEPA only. This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site available for further solar development.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010) and LSA Associates, Inc. (2010).

Table Key: ac = acres; BLM = United States Bureau of Land Management; CDCA = California Desert Conservation Area; CEQA = California Environmental Quality Act; Corps = United States Army Corps of Engineers; IVS = Imperial Valley Solar; MW = megawatts; NEPA = National Environmental Policy Act; ROW = right-of-way; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement.

All the Build Alternatives described in Table 2-1, including the Agency Preferred Alternative, would require a CDCA Plan amendment and a ROW grant.

2.2 IVS Project: 750 MW Alternative (Proposed Action)

On June 30, 2008, Stirling Engine Systems (SES) Solar Two, LLC (now Tessera Solar) submitted an Application for Certification (AFC) to the CEC to develop the IVS project on both privately owned land and public land managed by the BLM in Imperial County, California. On October 1, 2008, the CEC Commission accepted the AFC as complete.

Tessera Solar has applied for a right-of-way (ROW) grant from the BLM California Desert District for the part of the project site managed by the BLM.

The site proposed for the IVS project is approximately 6,500 ac in the southwest part of Imperial County approximately 100 miles (mi) east of the City of San Diego, 14 mi west of El Centro, and 4 mi east of Ocotillo. Figure 2-1 shows the location of the IVS project site. The figures cited in this section are provided following the last page of text in this section.

The site consists of approximately 6,140 ac of public land administered by the BLM, and approximately 332 ac of private land under the jurisdiction of Imperial County. The analysis in this Final Environmental Impact Statement (FEIS) generally focuses on the 6,144 ac under the jurisdiction of the BLM as that is the area subject to the BLM ROW grant and the proposed amendment to the CDCA Plan. The approximately 332 ac in private ownership are not within the jurisdiction of the BLM and would not be included in the ROW grant or the CDCA Plan

amendment. However, impacts to resources on those privately owned 332 ac are included in the total impacts described in this FEIS.

As shown in Table 2-1, the IVS project proposes 30,000 SunCatchers on the approximately 6,500 ac site generating an estimated 750 MW of electricity. This is the project as proposed originally by the project applicant. The IVS project would be a nominal 750-MW project, with construction planned to begin in late 2010. Although construction would take approximately 40 months to complete, power would be available to the grid as each 60-unit group of SES engine modules is completed. The primary equipment for the generating facility would be approximately 30,000, 25-kilowatt (kW) solar dishes referred to as SunCatchers, and their associated equipment, systems, and support infrastructure.

Although the construction of the IVS project and the initiation of electricity generation will be phased (Phases I and II), the project is analyzed in this FEIS as if all 30,000 SunCatchers are operational at the same time. The following sections describe the structures and facilities proposed on the project site; the process for generating electricity with the SunCatcher technology; and key project-related construction, operations and maintenance, and decommissioning activities for the IVS project.

2.2.1 Bureau of Land Management Actions for the Imperial Valley Solar Project

In order for the IVS project to be constructed and operated on BLM lands, the BLM must take the actions described in the following sections.

2.2.1.1 National Environmental Policy Act

Prior to taking any action regarding the proposed IVS project, the BLM must comply with the requirements of the National Environmental Policy Act (NEPA). The BLM and the CEC prepared a joint SA/DEIS for the proposed IVS project. That SA/DEIS was circulated for agency and public review on February 10, 2010, and the comments received on that report and responses to those comments are included as Appendix D, Public Comments on the Draft Environmental Impact Statement. To the extent that opposing views were expressed in the public comments, those opposing views are summarized in Chapter 5, Consultation, Coordination, and Public Participation, and are responded to in the responses to comments provided in Appendix D. Other comments on the DEIS received by the BLM are also summarized in Chapter 5 and are also responded to in Appendix D. After issuing the ROD, the BLM must publish a Notice of Availability of the ROD in the Federal Register.

2.2.1.2 California Desert Conservation Area Plan Amendment

BLM lands in the California Desert District are governed by the *California Desert Conservation Area Plan* (CDCA Plan, 1980 as amended). The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not specifically identified in the CDCA Plan for a project site be considered through the Plan Amendment process. The Planning Criteria for considering a Plan Amendment are discussed in Chapter 4.10, Land Use and Corridor Analysis.

The IVS project site currently is classified as Multiple-Use Class L (Limited Use) Designation in the CDCA Plan. The Limited Use classification is intended to protect sensitive, natural, scenic, ecological and cultural resource values. Public lands classified as Limited Use are managed to provide for multiple use of resources at a lower intensity, ensuring that sensitive values are not significantly diminished. The construction and operation of a solar generating project on the IVS project site would require the BLM to amend the CDCA Plan to allow solar energy generating activities in the Multiple Use Class L (Limited Use) on the IVS project site. The CDCA Plan amendment would restrict the use of the IVS project site to that solar use only.

Based on Table 1, Multiple Use Class Guidelines, in the CDCA Plan, solar uses are conditionally allowed in the Multiple Use Class L designation contingent on NEPA requirements being met for the proposed use. This FEIS meets the NEPA requirements for consideration of the proposed IVS project.

2.2.1.3 Guidance for Processing Applications on BLM Lands

Also, pursuant to the *Guidance for Processing Applications for Solar Power Generation Facilities on BLM Administered Public Lands in the California Desert District* (BLM 2008) and Title 43, Part 2804.25 of the Code of Federal Regulations (CFR):

> "When all or part of a proposed renewable energy project is located in a designated utility corridor, the impacts of occupying the utility corridor must be analyzed, along with alternatives that would help mitigate the impacts to the utility corridor. The EIS prepared for a proposed solar energy project should analyze the impact that the project would have on the ability of the utility corridor to serve its intended purpose, i.e., would the corridor continue to retain the capacity to site additional utilities in the corridor or would the project so constrain the available land within the corridor that it would limit the corridor's ability to locate additional linear facilities, e.g. transmission lines, pipelines, etc."

As discussed in Section 3.9, Land Use and Corridor Analysis, the IVS project site is within existing designated Utility Corridor "N" Section 368 115-238 (CDCA N, 368 115-238). The IVS project site occupies approximately 60 percent of the northern half of Utility Corridor "N" 368 115-238.

The potential impacts of occupying a utility corridor are evaluated in Section 4.9, Land Use and Corridor Analysis. In the immediate vicinity of the IVS project site and in Utility Corridor CDCA N, 368 115-238, additional capacity is available for future and currently unproposed projects. Joint use of the corridor is adequate to accommodate the IVS project, ancillary facilities, and current authorized but yet unbuilt and pending projects.

2.2.1.4 Revisions to Open Routes

In 2002, the BLM updated access plans and routes in the Western Colorado Desert through the *Western Colorado Desert Routes of Travel Designations* (WECO) amendment to the CDCA Plan. The WECO amendment assigned and/or revised access for off highway vehicle (OHV) routes in the Western Colorado Desert. Currently, there are 10 Open Routes traversing the IVS project site. Open Route access is defined in the CDCA Plan as follows:

> "Access on route by motorized vehicles is allowed. Special uses with potential for resource damage or significant conflict with other use may require specific authorization."

The 10 Open Routes on the IVS project are listed in Table 2-2. As part of approval of the ROW grant, BLM would need to revise the Open Routes on the IVS project site. These revisions would involve closure of some or all of the Open Routes on the IVS site, depending on which Build Alternative is selected.

The process for revisions to designated routes on BLM lands is described in both the CDCA Plan Motorized Vehicle Access Element and BLM's guidance on the Comprehensive Travel and Transportation Management (CTTM) program. These revision processes recognize the changing contexts and need for flexibility in allowing OHV public access on BLM managed lands. The Motorized Vehicle Access Element of the CDCA Plan (page 82), describes the process for changing the designations of vehicle access routes as follows:

Table 2-2 Open Routes on the IVS Project Site

Route ID No.	Location
T670246	North/south from west of Plaster City quarry to intersect with T6700254 and then turns west to intersect with T670251
T670247	Parallel along San Diego Metropolitan Transit System rail track on northwest side of site then deviates south and returns to parallel track
T670248	Perimeter route for most of site connecting with T670247 and intersecting numerous routes
T670251	West side of site running northwest to south east connecting with T670247 and T670246
T670254	Small connector route on south side of site between T670246 and T670254
T670255	Follows diagonal across site from northwest to southeast under the Southwest Powerlink transmission line
T670256	Roughly parallel to T670255 connecting T670246 and T670248
T670260	Short route from middle of southern edge to northeast terminating local wash
T670345	Connector route on southeast side of site roughly paralleling transmission line connecting T670256 and T670248
T670350	On east boundary of site intersecting route T670248

Table Source: BLM Website for Western Colorado Desert Routes of Travel Designations (WECO), http://www.blm.gov/ca/news/pdfs/weco_2002/WECO%20Route%20List-Final_1201.pdf, Table of Open, Limited and Closed Routes

> "Decisions affecting vehicle access, such as area designations and specific route limitations, are intended to meet present access needs and protect sensitive resources. Future access needs or protection requirements may require changes in these designations or limitations, or the construction of new routes…Access needs for other uses, such as roads to private lands, grazing developments, competitive events, or communication sites, will be reviewed on an individual basis under the authority outlined in Title V of FLPMA and other appropriate regulations. Each proposal would be evaluated for environmental effects and subjected to public review and comment. As present access needs become obsolete or as considerable adverse impacts are identified through the monitoring program, area designations or route limitations will be revised. In all instances, new routes for permanent or temporary use would be selected to minimize resource damage and use conflicts, in keeping with the criteria of 43 CFR 8342.1."

In addition, BLM has an administrative process for revising route designations given the evolving and changing priorities for lands under its control. These processes are included in the CTTM and Land Use Plan (LUP) programs. Therefore, this administrative process along with the administrative process described in the CDCA Plan, and as allowed under Title V of the FLMPA, would be implemented to revise the affected Open Routes to Closed Routes, as necessary, depending on the selected Build Alternative.

2.2.1.5 Bureau of Land Management Right-of-Way Grant

Under Federal law, the BLM is responsible for processing requests for right-of-way (ROW) grant applications to determine whether and to what extent to authorize proposed projects such as renewable energy projects, transmission lines and other appurtenant facilities on land it manages. Because the IVS project is a privately initiated venture that would be sited on lands management by the BLM, the project applicant has applied for a ROW grant from BLM pursuant to the United States Department of the Interior regulations. If the ROW Grant is approved by BLM, it will have conditions based on this Final EIS and other Federal rules and regulations applied to Federal lands. If the ROW grant is approved, the applicant would then be authorized to construct and operate the project, if it meets the requirements of the ROD. The ROD will require, if the project is approved, that the applicant secure certification from the CEC before the BLM will issue a Notice to Proceed to the applicant. The applicant would then be able to construct and operate the proposed IVS project on the project site.

If the ROW grant application and the CDCA Plan amendment are approved by the BLM, the IVS project would be authorized in accordance with Title V of the Federal Land and Management Policy Act FLMPA of 1976 (FLMPA) and 43 CFR Part 2800.

2.2.2 Structures and Facilities

2.2.2.1 Site Layout/Arrangement

The basic building blocks for the 750 MW IVS project would be 1.5 MW groups of 60 SunCatchers. The 1.5-MW groups would be connected in series to create 3-, 6-, and 9-MW solar groups which would then be connected to overhead collection lines rated at 48 or 51 MW. The typical solar groups would be arranged as necessary to fit the contours of the site. The layout of the major project structures and features is shown on Figure 2-2.

2.2.2.2 Major Project Equipment and Structures

The major equipment and structures proposed for the IVS project are described briefly in Tables 2-3 and 2-4, respectively. The primary features of the IVS project are described in more detail in the following sections.

Table 2-3 Major Equipment List

Description	Quantity	Size/Capacity	Remarks
SunCatcher power generating system	30,000	25 kW	Each SunCatchers will focus solar energy onto a power conversion unit to generate 25 kW of electricity
Generator collection sub-panel; distribution panel, 42 circuit, with circuit breakers in a weatherproof enclosure	2,500	400 A, 600 V	The generator will collect the output from 12 dish assemblies (a group of SunCatchers generating 300-MW). Each dish assembly will connect to a 40-A, 3-pole circuit breaker (36 poles total).
Generator collection power center, distribution switchboard with 6 400-A circuit breakers	500	2,000 A Bus, 600 V	This power center will collect 5 1.5-MW solar groups and connect one power factor correction capacitor group.
Collector GSU transformer, with taps	500	1,750 kVA, 575 V to 34.5 kV	The GSU will step up power from the 1.5-MW solar groups (each group of 60 SunCatchers).
Power factor correction capacitor, switched in 5 each 200 kVAR steps	500	1,000 kVAR, 600 V	This capacitor will provide power factor correction at the 1.5-MW solar group level.
Open bus switch rack, 5 1,200-A feeder breakers, 40-kA INT, with switches, insulators, and bus work	5	34.5 kV, 3,000A	Each switch rack lineup will collect 150 MW at 34.5 kV.
Shunt capacitor bank, switched in 6 15-MVAR steps	5	34.5 kV, 90 MVAR	This facility will provide power factor correction at the 150-MW solar group level.
DVAR compensation system in coordination with shunt capacitor banks; size to be determined by studies	1	34.5 kV, size to be determined	This system will provide active VAR compensation to maintain a required power factor profile and to aid in meeting low-voltage ride-through requirements.
Disconnect switch, 35 kV, 200 kVBIL, group-operated	10	35 kV, 3,000 A	This switch will provide the capability to isolate a power transformer from the 34.5-kV collection system.
Power transformer, 3-phase, oil filled	5	120/160/200 MVA, 230/132.8 to 134.5/19.9 kV, 750 kV BIL	This power transformer will step up power from the 34.5-kV collection voltage to the 230-kV transmission voltage.
Power circuit breaker	7	242 kV, 2,000 A, 40-kA interrupting capacity	This circuit breaker will provide transformer and line protection.

Description	Quantity	Size/Capacity	Remarks
Coupling capacitor voltage transformer	6	242 kV, 900 kV BIL, 60 Hz, PT Ratio 1,200/2,000:1	This transformer will provide voltage source for protection and control.
Disconnect switch, 242 kV, 900 kV BIL, group operated	10	242 kV, 2,000 A	This switch will provide for the isolation of the power transformers, breakers and for isolating the substation from the interconnect transmission lines.
Diesel power generator set	1	250 kW, 480 V	This generator set will be in the Main Services Complex.
Fire water pump, diesel	1	26 HP	This fire water pump will be in the Main Services Complex.
Water Treatment	1	64,000 gpd	The water treatment on the site will be an automatic RO.

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 12, 2010).

Table Key: A = ampere (amp); BIL = basic impulse level; D = dynamic volt amp reactive; gpd = gallons per day; GSU = generator step-up unit; HP = horsepower; Hz = hertz; INT = international; kA = kilo amps; kV = kilovolt; kVA = kilovolt amps; Kvar = kilovolt amp reactive; kW = kilowatt; kWe = kilowatt-electric; MVA = megavolt amps; MVAR = megavolt amp reactive; MW = megawatts; RO = reverse osmosis; V = volts; VAR = volt amp reactive; W = watts.

Table 2-4 Major Structures and Equipment

Description	Quantity	Length (feet)	Width (feet)	Height (feet)
SunCatcher power generating system (individual SunCatcher dishes)	30,000	38	38	40
Main Services Complex administration building	1	200	150	14
Main Services Complex maintenance building	1	180	250	44
Main SunCatcher assembly building	3	211	170	78
Raw water storage tank, 175,000 gallons	1	40	40	20
Demineralized water tank, 175,000 gallons	2	40	40	20
Potable water tank, 17,000 gallons	1	18	18	10
230-kV transmission line towers, double-circuit with upswept arms	85 to 100	--	32	90 to 110
Generator collection sub-panel; distribution panel, 42 circuit, 400 A, 600 V, with circuit breakers in a weatherproof enclosure	2,500	1	2.67	5
Generator collection power center, 2,000-A distribution panels with 6 400-A circuit breakers	500	2	3.33	7.5

Description	Quantity	Length (feet)	Width (feet)	Height (feet)
Collector GSU transformer, 1,750 kVA, 575 V to 34.5 kV, with taps	500	6.67	7.5	6.67
Power factor correction capacitor, 600 V, 1,000 kVAR, switched in 5, each 200 kVAR steps	500	2.5	6.67	7.5
Open bus switch rack, 35 kV, 7 bay with 5 35-kV, 1,200-A, 40-kVA INT, circuit breakers, insulators, switches, and bus work	5	105	20	30
Shunt capacitor bank, 34.5 kV, 90 MVAR switched in 6 each 15 MVAR steps	6	15	8	20 (Table Note 1)
DVAR compensation system in coordination with shunt capacitor banks – size to be determined by studies	4	60	12	16
Disconnect switch, 35 kV, 3,000 A, 200 kV BIL, group-operated	5	3	11	16 (Table Note 1)
Power transformer, 3-phase, 100/133/166.7 megavolt amp, 230/132.8-34.5/19.9 kV, 750 kV BIL, oil filled	5	15	35	23
Power circuit breaker, 242 kV, 2000A, 40 kilo amp interrupting capacity	7	12	20	16
Coupling capacitor transformer for metering, 242 kV, 900 kV BIL, 60 hertz, potential transformer ratio 1,200/2,000:1	6	1	1	25 (Table Note 1)
Disconnect switch, 242 kV, 2000A	10	10	25	25 (Table Note 1)

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 12, 2010).

Table Note 1: Includes structure height to provide electrical safety clearances to ground.

Table Key: -- = not applicable; A = ampere (amp); BIL = basic impulse level; DVAR = dynamic volt amp reactive; GSU = generator step-up unit; INT = international; kV = kilovolt; kVA = kilovolt amp; kVAR = kilovolt amp reactive; MVAR = megavolt amp reactive; v = volts; GSU = generator step-up unit.

2.2.2.3 SunCatchers

As shown in Tables 2-3 and 2-4, the primary equipment for the generating facility would be the approximately 30,000, 25-kW solar dishes referred to as SunCatchers, and their associated equipment, systems, and support infrastructure. Each SunCatcher would consist of a solar receiver heat exchanger and a closed-cycle, high-efficiency SES engine specifically designed to convert solar power to rotary power to drive an electrical generator to produce electricity.

The SunCatchers in Phase I would require approximately 2,600 ac and in Phase II would require approximately 3,500 ac of the site. The total area for both phases, including the areas for the Main Services Complex, the operation and administration building, the maintenance

building, and the substation building and other infrastructure, is approximately 6,500 ac. The 230-kV transmission line required for Phase I would parallel the existing San Diego Gas and Electric (SDG&E) Southwest Powerlink transmission line and would be within the existing ROW for that SDG&E transmission line.

Each SunCatcher would include three major components: the foundation/pedestal, the dish assembly, and the power conversion unit (PCU) as described in the following sections.

Foundation/Pedestal

Each solar dish would typically be mounted on a foundation consisting of a metal pipe hydraulically driven into the ground. When conditions are not conducive to the use of the metal pipe foundation, the foundation would consist of rebar-reinforced concrete constructed below grade. Both these foundation designs would meet all applicable structural design requirements and applicable laws, ordinances, regulations, and standards (LORS).

The SunCatcher dish assembly would be secured on a pedestal approximately 18 feet (ft) 6 inches (in) high. The pedestal would be either an integrated part of the metal pipe foundation or a separate structure fastened to the rebar-reinforced concrete foundation at ground level.

Dish Assembly

The SunCatcher is a 25-kilowatt-electrical (kWe) solar dish designed to automatically track the sun and collect and focus solar energy onto a PCU, which generates electricity. The system would consist of a 40-ft-high by 38-ft-wide solar concentrator in a dish structure supporting an array of curved glass mirror facets. The curved shape of the mirrors will be engineered to concentrate solar energy onto the solar receiver part of the PCU. The dish assembly would include azimuth and elevation drives for tracking the sun and a PCU support boom. Refer to Figure 2-3.

The SunCatcher dish positioning control system employs proprietary algorithms to track the sun. This system focuses the solar energy onto the solar receiver by controlling elevation and azimuth drives, and executes startup, shutdown, and de-track procedures. These procedures allow the dish to wake up in the morning from the night-stow position to focus the dish mirror facets on the solar receiver of the PCU, and then to track the sun during daylight hours. The dish control system communicates with and receives instructions from the central control room via the supervisory control and data acquisition (SCADA) system. The SCADA system is designed to place the dish into a wind stow position when sustained winds exceed 35 miles per hour (mph) to protect the system from wind damage, on loss of communications with the central control room, or on receipt of a fault signal from the PCU control system.

Power Conversion Unit

A generator connected to the engine will produce the electrical output of the SunCatcher. Each generator will be capable of producing 25 kWe at 575 volts alternating current (VAC)/60 hertz (Hz) of grid-quality electricity when operating with rated solar input. Waste heat from the engine would be transferred to the ambient air via a radiator system similar to those used in automobiles.

The hydrogen gas will be cooled by a standard glycol-water radiator system and will be continually recycled within the engine during the power cycle. The conversion process will not consume water. The only water used for the SunCatchers will be for washing the mirrors to remove accumulated dust and replenishing small losses to the cooling system radiator in a 50-50 glycol-water coolant.

The PCUs are approximately 7 ft long, 5 ft wide, and 3 ft high and weigh approximately 1,400 pounds.

2.2.2.4 Project Buildings and Structures

A number of building and structures will be required on the project site, as listed in Table 2-4 and as described below. All buildings and structures on the project site would be constructed in accordance with the appropriate edition of the California Building Code (CBC) and other applicable LORS.

The Main Services Complex would include a number structures and facilities. This Complex would be located in a central location on the project site to provide for efficient access routes for maintenance vehicles servicing the SunCatcher solar field. Structures and facilities in the Main Services Complex will include the main control room; warehouse and shop spaces to provide work areas and storage for spare parts for project maintenance; meeting and training rooms; maintenance and engineering offices; and administrative offices.

The administration offices and personnel facilities would be in a one-story operation and administration building. That building would be approximately 200 ft long, 150 ft wide, and 14 ft high. This building would also contain meeting and training rooms, engineering offices, a visitor's room, and support services.

The project maintenance facilities, shop, and warehouse storage building would be adjacent to the operation and administration building. The maintenance building would be approximately 180 ft wide, 250 ft long, and 44 ft high. This building would contain maintenance shops and

offices, PCU rebuild areas, maintenance vehicle servicing bays, chemical storage rooms, the main electrical room, and warehouse storage for maintenance parts to service the SunCatchers.

The water treatment shade structure would be northeast of and next to the Main Services Complex. That structure would house water treatment equipment and safe storage areas for water treatment chemicals. A motor control center for the water treatment equipment and pumps would be in the structure. Two netted wastewater evaporative ponds for water treatment containment would be just north of the water treatment structure.

A control building would be located near the on-site electricity substation. This building would contain relay and control systems for the substation and the project operations control room.

A diesel-powered fire water pump and a diesel operated standby power generator would be adjacent to and on the north side of the operation and administration building.

Electric service for the Main Services Complex would be obtained from Imperial Irrigation District (IID). Electric power would be provided via an overhead service line from an existing IID overhead distribution line on the north side of Evan Hewes Highway. The applicant would responsible for applying to the IID for the extension of electric lines from the existing overhead line onto the IVS project site. The IID would need to apply for and receive an easement from the BLM for the part of that line on BLM managed land on the IVS project site.

Communications service for the Main Services Complex would be provided by L3 Communications Holdings, Inc. That service would be provided via an overhead service line from existing underground communications lines on the north side of the railroad south of Evan Hewes Highway. The applicant would responsible for applying to L3 Communications Holdings, Inc. for the extension of the existing communication line onto the IVS project site. L3 Communications Holdings, Inc. would need to apply for and receive an easement from the BLM for the part of that line on BLM managed land on the IVS project site.

The operation and administration building, maintenance building, and Main Services Complex would be manufactured buildings painted with a matching desert sand color. The water treatment building and the water holding tanks, including the potable water, raw water, and demineralized/fire protection water tanks at the Main Services Complex, would also be painted with a matching desert sand color.

The exterior material for the assembly buildings would be a fire retardant vinyl fluoride film with ultraviolet blocking characteristics and would be chemical and weather resistant. The exteriors would be painted a desert sand color to match the other structures.

The IVS project includes an electrical transmission line, water supply pipeline, and a site access road. The off-site 6-in-diameter water supply pipeline would extend approximately 11.8 mi from the SWWTP to the project site boundary. The water supply pipeline would be routed in the Evan Hewes Highway ROW, or adjacent to that ROW on public and private lands. As described earlier, the applicant is proposing an alternative water supply source until the improvements at the SWWTP are operational and the SCWD is able to provide treated water to the site.

Approximately 7.6 mi of the 10.3-mile double-circuit generation interconnection transmission line would be constructed off-site. The transmission line would connect the IVS project on-site substation to the existing San Diego Gas & Electric (SDG&E) Imperial Valley Substation.

A site access road would be constructed from Evan Hewes Highway to the northern boundary of the project site.

The project site will fenced for security. The design of the fencing will be finalized in coordination with the regulatory and resource agencies to protect sensitive ecological areas and address storm flows in washes. The fenced boundary of the site would encompass approximately 6,500 ac of land, not including the private parcels of land designated as not a part of the project.

During project construction and operation, the main access to the project site would be from the north from Evan Hewes Highway. Secondary access would be from the east via Dunaway Road and Interstate 8 (I-8). There will be paved arterial roads, unpaved perimeter roads, and unpaved access roads on the project site. The paved roads would reduce fugitive dust while allowing full access to all dishes and infrastructure. Polymeric stabilizers may be used in lieu of traditional road construction materials for paved roads and/or to stabilize unpaved roads. All access to the project site would be through controlled gates.

2.2.3 Construction Activities

2.2.3.1 Overview of Construction

The IVS project would be constructed in two phases. Phase I would consist of the assembly and installation of up to 12,000 SunCatchers configured in 200 1.5-MW solar groups of 60 SunCatchers per group. Phase I would have a net nominal generating capacity of 300 MW. Phase II would add approximately 18,000 SunCatchers, expanding the IVS project to a total of approximately 30,000 SunCatchers configured in 500 1.5 MW solar groups with a total net generating capacity of 750 MW. The construction and installation of the 30,000 SunCatchers will take approximately 40 months.

Heavy construction for the project would be scheduled to occur between 0700 and 1900 Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

Some construction activities would continue 24 hours per day, 7 days per week. These activities include, but are not limited to, SunCatcher assembly, refueling of equipment, staging of materials for the next day's construction activities, quality assurance/control, and commissioning.

The construction of the IVS project would be conducted in accordance with project plans and mitigation measures to ensure the construction conforms with applicable LORS and addresses potential adverse project impacts. The plans and measures are provided in Chapter 4, Environmental Consequences.

2.2.3.2 Temporary Facilities and Structures

The construction of the IVS project would require some temporary facilities and structures as described below.

Temporary Laydown Areas

Two temporary laydown areas would be required during construction of the IVS project. One would be on an approximately 110 ac parcel east of Dunaway Road and north of I-8. The other laydown area would be on approximately 11 ac on the project site, adjacent to the Main Services Complex.

Temporary SunCatcher Assembly Buildings

The SunCatcher assembly would be performed on-site in temporary structures. These buildings would be decommissioned after all the SunCatchers are assembled and installed. The three assembly buildings would be adjacent to the Main Services Complex.

Each assembly building would be 170 ft wide, 211 ft long, and 78 ft high and would contain two assembly lines. Each assembly building would be adjacent to a 50 ft by 510 ft concrete pad for the storage of SunCatcher components and assembled SunCatcher staging before field installation.

The primary purpose of the SunCatcher assembly buildings would be the assembly of the SunCatcher superstructure, the main beam assembly and trusses, the pedestal trunnion, mirrors, wire harnesses, control systems, drive position motors, and the calibration of the

mirrors and control systems before field installation. Each assembly bay would be equipped with an automated platform on rails to move each SunCatcher through the assembly process.

There would be transport trailer storage south of the assembly bays. This storage facility would accommodate approximately 75 to 100 trailers, maintaining a 3 to 5 day inventory of SunCatcher parts during the assembly phase of construction.

The temporary assembly buildings would be decommissioned and salvaged after all the SunCatchers are assembled and installed.

2.2.3.3 Site Grading and Drainage

Brush trimming would be conducted between alternating rows of SunCatchers during construction and operations. This trimming would consist of cutting the top of the existing brush while leaving the existing native plant root system in place to minimize soil erosion. To minimize shading on the SunCatchers and prevent potential brush fire hazards, natural vegetation would be cleared in the area of each SunCatcher as well as on either side of the paved arterial roads. Vegetation would be removed (mowed) during installation of the SunCatchers and only the areas beneath the SunCatchers would be maintained in a mowed condition to eliminate interference with dish operations. Unpaved roads used for maintenance of the dishes would also remain unvegetated.

After the initial installation of the dishes, the areas between each set of dishes (two rows of six SunCatchers) and each array group (five groups of 12-unit sets) would be left undisturbed, and these areas would return to a vegetated condition. It is estimated that only 5 percent of the area originally mowed for the installation of the SunCatcher units would be maintained in a mowed condition after the construction of the project is complete.

After brush has been trimmed, blading for roads and foundations would be conducted between alternating rows to provide access to individual SunCatchers. Blading would consist of limited removal of terrain undulations. Although ground disturbance would be minimized wherever possible, localized rises or depressions within the individual 1.5-MW solar groups may be removed to provide for the proper alignment and operation of the individual SunCatchers. Paved road would be constructed as close to the existing topography as possible, with limited cut-and-fill operations to maintain a maximum 10 percent slope on the roads.

The layout of the project facilities would maintain the local pre-development drainage patterns where feasible, and water discharge from the site would remain at the eastern boundary. The paved roads would have a low-flow, unpaved swale or road dip as needed to convey nuisance runoff to existing drainage channels/swales. It is expected that storm water runoff would flow

over the crown of the paved roads, which are typically less than 6 in from the swale flow line to the crown at the centerline of the road, thus maintaining existing local drainage patterns during storms. Unpaved roads would use low-flow culverts.

There would be localized channel grading on a limited basis to improve channel hydraulics within the dry washes and to control flow direction where buildings and roads are proposed. The Main Services Complex would be protected from a 100-year flood by berms or channels that would direct flows around the perimeter of the Complex, if required.

2.2.4 Operations and Maintenance Activities

2.2.4.1 Electricity Generation

The IVS project would be an as-available resource. The project would operate anywhere between a minimum of approximately 18 MW net when the first SunCatcher units are interconnected to the grid to 750 MW on completion of installation of all 30,000 SunCatchers. The capability for independent operation of all 30,000 units would provide for maximum flexibility in operations.

The electricity generated by the IVS project would be dispatched by the California Independent System Operator (California ISO), through day-ahead, hour-ahead, and real-time scheduling, as required to meet the demands of the southern California market. The market would dictate unit operations and total power requirements. The IVS project is anticipated to operate approximately 3,500 hours yearly, with an overall availability of 99 percent or higher. The number of available operating hours will be determined by the availability of the sun's energy at greater than 250 watts per square meter (sq m). SunCatchers would be unable to generate electricity when the sun's energy is below 250 watts per sq m such as in the early morning, late evening, and when cloud cover limits the sun's energy. SunCatchers would also be unable to generate electricity during daylight hours when wind speed exceeds 35 mph, because the SunCatchers would be stowed in a safe de-track position at or above this wind speed to prevent damage SunCatchers. SunCatchers are designed to withstand wind speeds of 50 mph in the operating mode and 90 mph in the stowed position. Because the SunCatchers move slowly, they would start moving into the stow position once winds reach 35 mph in order to be in the stow position by the time winds reach 90 mph. Because of the size of the project site, cloud cover and/or wind conditions may affect only some of the SunCatchers at any given time.

It is expected that the IVS project would be operated with a staff of approximately 164 full-time employees. The project would operate 7 days per week, generating electricity during normal

daylight hours when the solar energy is available. Maintenance activities would occur 7 days a week, 24 hours a day to ensure SunCatcher availability when solar energy is available.

2.2.4.2 Transmission System Interconnection and Upgrades

The IVS project would include construction of a new 230-kV substation approximately in the center of the project site. The substation would consist of an open air bus with 15 35-kV collection feeder circuit breakers. Each feeder breaker would be connected to one of the 48- or 51-MW overhead collection lines. Additional 35-kV circuit breakers would connect to power factor correction capacitor banks located in the substation yard. This new substation would be connected to the existing SDG&E Imperial Valley Substation via an approximately 10.3-mi long, double-circuit, 230-kV transmission line. Other than this interconnection transmission line, no new transmission lines or off-site substations would be required for the operation of the 300-MW Phase I of the IVS project. The substation on the IVS project site would be expanded with the addition of 3 power transformers in Phase II of the IVS project.

Control, metering, and protection systems for the line, substation, and collection systems would be in a control building adjacent to the substation. The control building would also contain the necessary communications equipment to meet owner, California ISO, and SDG&E requirements. Additional substation equipment would include a 34.5-kV power-factor correction capacitor control system designed to meet the power factor and zero and low-voltage ride-through requirements of the Interconnect Agreement.

The on-site segment of the interconnection transmission line would be installed in a 100 ft wide ROW from the IVS project substation east and south to the point where the SDG&E Southwest Powerlink transmission line ROW crosses the southern boundary of the project site. That routing was selected to minimize the distance required and to reduce the undercrossing of the line with assembled SunCatchers.

The off-site segment of the 230-kV interconnect transmission line would be routed in a 100-ft wide ROW parallel to the existing SDG&E 500-kV Southwest Powerlink transmission line on the southwest side until approximately the third tower from the SDG&E Imperial Valley Substation, where the line would cross under the existing 500-kV transmission line. This route was chosen to minimize effects on the flat-tailed horned lizard management area south of I-8 by using existing access roads for the existing transmission line and by placing the interconnect transmission line immediately adjacent to an existing disturbed area.

The interconnect transmission line would cross under the existing 500-kV transmission line and the proposed future second 500-kV transmission line (part of the Sunrise Powerlink project) at

approximately the third tower from the SDG&E Imperial Valley Substation and would then continue east and due south to the point of interconnect. This crossing point was selected to maintain the routing along the existing corridor as long as possible.

The transmission line towers would consist of H-frame towers at the undercrossing of the existing 500-kV transmission line and double-circuit lattice steel towers and/or steel poles elsewhere. Both circuits of the overhead 230-kV transmission line would be constructed with one 1,590-kilo circular miles/phase, aluminum steel-reinforced conductor per line, each thermally rated to carry full project output in emergency conditions and one-half of project output in normal conditions. Two fiber optic cables would be provided for communication with SDG&E and the California ISO.

Each set of overhead 230-kV transmission conductors to the physical connection with the existing Imperial Valley Substation 500-kV transmission line would be supported by a dead-end structure in the IVS project substation and 85 to 100 double-circuit lattice steel transmission towers and/or steel poles.

2.2.4.3 Hydrogen System

The hydrogen gas needed during IVS project operations will be produced using electrolysis by a single on-site hydrogen generator. The hydrogen generator will produce 1,065 standard cubic feet of hydrogen per hour (scfh) and will require 146 watts/scf of electricity and 2.6 cubic inches (in) of water/scf/hour during operation. Approximately 184 gallons per day (gpd) of water, or 0.0133 acre feet per year, would be required for this generator.

Reclaimed water would be obtained from the Seeley County Water District (SCWD), processed through the on-site reverse osmosis (RO) system to produce demineralized water and fed to the electrolyzer mounted on the hydrogen generator skid. The electrolyzer would eliminate any final impurities in the water prior to processing. The annual power consumption to meet the hydrogen production needs is 100 KW per day, or 36.6 MW per year. Although the hydrogen generator could run full time if needed to support the SunCatcher hydrogen requirements, the generator would normally be operated at off-peak electric hours using grid power. The hydrogen gas would be stored in a steel storage tank capable of storing approximately 2 days supply of hydrogen gas. It would be piped through a 1.5 in diameter stainless steel piping system to 87 individual compressor groups. Each compressor group will be electrically operated and consist of a compressor, delivering gas at approximately 2,900 pounds per square inch gauge (psig) pressure, and a high pressure supply tank.

Initially, it would take 3.4 scf of hydrogen to charge each Stirling engine. Each power conversion unit (PCU) is estimated to lose about 200 scf of hydrogen per year. Each high pressure supply tank would supply hydrogen gas to 360 SunCatchers via a 0.25 in diameter stainless tubing. A low pressure dump tank would be installed with each compressor group using a 0.25 in diameter stainless steel return line to recover hydrogen gas when the SunCatchers are not in-service. This would reduce hydrogen leaks through fittings and seals on the Stirling Engine. In the event the hydrogen generator fails, an unloading station designed to receive and transfer hydrogen gas to the storage tank would allow for the delivery of hydrogen gas to the site by an outside supplier. The hydrogen gas storage tank would provide a few days of hydrogen supply as a back-up system. SES would complete all scheduled maintenance to the hydrogen generator, when the gas supply is adequate.

The applicant described the hydrogen use, supply and storage in the AFC, filed June 30, 2008. The hydrogen system was described as a k-bottle of hydrogen on each Power Conversion Unit (PCU). One hydrogen gas cylinder would contain approximately 195 cubic feet of hydrogen, used to replenish lost hydrogen gas within the gas circuit. Each k-bottle was to be supported from the base of the PCU boom. Each PCU's k-bottle would either need to be removed and replaced or refilled at each dish site as required (approximately two times per year). The applicant reconsidered the plan for providing hydrogen to the PCUs and has proposed an on-site hydrogen gas supply, storage and distribution system that would eliminate the need for the delivery of hydrogen k-bottles.

2.2.4.4 Drainage

Arizona crossings (road dips) would be placed along the roads or low-flow culverts consisting of a small-diameter storm drain with a perforated stem pipe, as needed to cross the minor or major channels/swales. These designs would be based on best management practices (BMPs) for erosion and sediment control. Arizona crossings would also be used for major washes where the channel cross section exceeds 8 ft in width and 3 ft in depth or exceeds 20 ft in width and 2 ft in depth. The road section at the channel flow line would not have a crown. If asphalt is selected as a paving material, road protection would be provided by a concrete cut-off wall along the edges of the road with un-grouted (loose) riprap upstream and downstream of the concrete cut-off wall. Alternatively, if polymeric stabilizers are selected, no protection measures would be used or protection may be limited to un-grouted (loose) riprap at critical areas.

The proposed east-west on-site paved arterial road between the Main Services Complex and Dunaway Road would be designed as a designated evacuation route. The culverts for this road would be designed so that the driving surface of the road section is constructed above the projected profile of a 25-year event.

Road maintenance is anticipated to be required after rainfall events. For minor storm events, it is anticipated that the unpaved road sections may need to be bladed to remove soil deposition, along with sediment removal from stem pipe risers at the culvert locations. For major storm events, in addition to that blading and sediment removal, repairs may be required due to possible damage to pavement where the roads cross channels and where flows exceed the culvert capacity. Additional maintenance may be required after major storm events to replace soil eroded from around any SunCatcher pedestals located in washes.

The building sites would be developed per applicable drainage criteria, with provision for soft bottom storm water retention basins. Rainfall from paved areas and building roofs would be collected and directed to those storm water retention basins. The retention or detention basins would have a total volume capacity for a 3-in minimum precipitation covering the entire site. Volume can be considered by a combination of basin size and additional volume provided within paving and/or landscaping areas. The retention basins would be designed so that the retained flows would empty within 72 hours after the storm to provide mosquito abatement. This design can be accomplished by draining, evaporation, infiltration, or a combination of these.

The post-development flow rates released from the project site are expected to be less than the pre-development flow rates based on the following:

- Except for the building sites, the majority of the project site would remain 100 percent pervious, as only a negligible part of the site would be covered by pavement and the SunCatcher foundations.
- The increased runoff expected from the building sites would be over-mitigated by capturing 100 percent of the runoff in a retention basin, where the storm runoff would be infiltrated and/or evaporated to the atmosphere.

The proposed perforated risers constructed upstream of the roadway culverts would provide for additional detention.

2.2.4.5 Water Supply and Treatment

The following types of water will be required for the project:

- Equipment washing water,
- Potable water,
- Dust control water, and

- Fire protection water.

When completed, the IVS project would require a total of approximately 32.7 acre-feet (af) of raw water per year. SunCatcher mirror washing and operations dust control under regular maintenance routines will require an average of approximately 23.3 gallons (gal) of raw water per minute, with a daily maximum requirement of approximately 39.2 gal of raw water per minute during the summer peak months each year, when each SunCatcher receives a single mechanical wash per month.

Potable water to meet plant requirements would be delivered by truck and stored in a 5,000 gal tank in the water treatment area. This tank would be able to provide all required potable water for the operating facility for 2 to 3 days at which time it would need to be replenished.

The IVS project water supply requirements are tabulated in detail in the SA/DEIS.

The IVS project was assumed to have tertiary treated water delivered via a pipeline from the SWWTP. This will require a water supply pipeline approximately 11.8 mi long, buried within the ROW of Evan Hewes Highway approximately 30 inches below the existing grade. The line would enter the IVS project site approximately 1,000 yards east of Plaster City and then run due south to the Raw Water Storage Tank on the IVS project site.

The SWWTP is at 1898 West Main Street in Seeley, California, approximately 13 mi east of the IVS project site. It is operated by the Seeley County Water District (SCWD) and is designed to produce secondary treated water at the rate of 200,000 gallons per day (gpd) (139 gallons per minute [gpm] or 224 acre feet per year [afy]).

According to the current National Pollutant Discharge Elimination System (NPDES) Permit for the SWWTP, the treatment system consists of a lift station, a drum screen, a bar screen, a “Clemson” aerated pond treatment system with surface aerators, pressure sand filters, and an ultraviolet (UV) disinfection system. The facility’s “Clemson” system consists of 5 aerated ponds operated in series. Bio-solids are removed by draining the last 2 ponds, removing the sludge and storing it in the out of service treatment ponds of the replaced treatment system, prior to removal. Wastewater is discharged from Discharge Point 001 to the New River, a water of the United States, tributary to the Salton Sea, and within the Salton Sea Transboundary Watershed.

There is a proposed upgrade to the existing SWWTP facility to allow it to meet Title 22 water quality standards and would fund the training of operators for the new facility. The SCWD would provide as much treated effluent water as needed to the IVS project. The current influent flow rate is approximately 150,000 gpd, or 168 afy. Improvements to the SWWTP would increase the Title 22 effluent capacity to 250,000 gpd. Any surplus water not needed by the IVS project will

be used by SCWD for irrigation or discharged into the New River. The discharge rate is based on the population of the service area, not the annual rain fall.

The water from SWWTP is characterized as secondary treated water and will require treatment to remove dissolved solids for SunCatcher mirror wash water applications.

In March 2010, the CEC prepared analysis regarding the use of secondary treated water from the SWWTP. That analysis is provided in Appendix E, Seeley Wastewater Treatment Plant Improvements.

As described earlier, the applicant proposes to use a temporary, alternative water supply until SWWTP water is available. This alternative water supply would be provided from an existing, permitted well through the Dan Boyer Water Company in Ocotillo. That water source is potable and permitted for use by construction or personal consumption. It is expected that the Build Alternatives would require this temporary water supply for between 6 months and 3 years. Water would be transported from the well to the IVS project site in 7,000 gal water trucks. It is anticipated that up to 13 round-trip truck trips per day would be required during construction and up to 7 round-trip truck trips per day.

2.2.4.6 Wastewater Management

The wastewater generated on site by a reverse osmosis (RO) unit would contain relatively high concentrations of total dissolved solids (TDS). Wastewater or brine generated by the RO unit would be discharged to a polyvinyl chloride (PVC)-lined concrete evaporation pond that meets the requirements of the local Regional Water Quality Control Board. Each pond would be sized to contain 1 year of discharge flow, approximately 2.4 million gallons (gal). A minimum of 1 year is required for the wastewater to undergo the evaporation process. The second pond would be in operation while the first is undergoing evaporation. The two ponds would alternate their functions on an annual basis.

After the brine has gone through the evaporation process, the solids that settle at the bottom of the evaporation pond would be collected and disposed of in an appropriate non-hazardous waste disposal facility. The solids would be removed during the summer months, when the concentration of solids would be at its greatest due to an increase in evaporation rates, to achieve maximum solids removal.

2.2.4.7 Hazardous Waste Management

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

2.2.5 Decommissioning Activities

Project closure can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, including closure for overhaul or replacement of the major components, such as major transformers, switchgear, etc. Causes for temporary closure include inclement weather and/or natural hazards (e.g., winds in excess of 35 mph, or cloudy conditions limiting solar insolation values to below the minimum solar insolation required for positive power generation, etc.), or damage to the facility from earthquake, fire, storm, or other natural acts.

Permanent closure is defined as a cessation in operations with no intent to restart operations owing to project age, damage to the project that is beyond repair, adverse economic conditions, or other substantial reasons.

The decommissioning associated with temporary and permanent closures are described in the following sections.

2.2.5.1 Temporary Closures

In the unforeseen event that the IVS project facility is temporarily closed, a contingency plan for the temporary cessation of operations will be implemented. The contingency plan will be followed to ensure conformance with applicable LORS and to protect public health, safety, and the environment. The plan, depending on the expected duration of the shutdown, may include the draining of chemicals from storage tanks and other equipment and the safe shutdown of equipment. Wastes will be disposed of according to applicable LORS.

2.2.5.2 Permanent Closure

The planned life of the IVS project is 40 years. However, if the project is still economically viable, it could be operated longer than 40 years. It is also possible that the project could become economically noncompetitive before 40 years have passed, resulting in early decommissioning. Whenever the project is permanently closed, the closure procedure will follow a decommissioning plan as generally described below.

The removal of the project from service, or decommissioning, would include the removal of equipment and appurtenant facilities. Because the conditions that would affect the decommissioning decision are largely unknown at this time, these conditions would be presented to the CEC, the BLM, and other applicable agencies for review and approval at the time of decommissioning, as part of the decommissioning plan. The decommissioning plan will discuss the following:

- Proposed decommissioning activities for the project and appurtenant facilities constructed as part of the project,
- Conformance of the proposed decommissioning activities with applicable LORS and local/regional plans,
- Activities necessary to restore the project site if the plan requires removal of equipment and appurtenant facilities,
- Decommissioning alternatives other than complete restoration to the original condition, and
- Associated costs of the proposed decommissioning and the source of funds to pay for the decommissioning.

In general, the decommissioning plan for the IVS project will attempt to maximize the recycling of project components. If not recyclable, the project components will be removed from the site and disposed of in an appropriate landfill or other disposal facility. The operator will attempt to sell unused chemicals back to the suppliers or other purchasers or users. Equipment containing chemicals will be drained and shut down to ensure public health and safety and to protect the environment. Nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. Hazardous wastes will be disposed of according to applicable LORS. The site will be secured 24 hours per day during the decommissioning activities, and the applicant will provide periodic update reports on the status of the implementation of the decommissioning plan to the CEC, the BLM, and other appropriate parties.

2.2.6 Related Facilities

This section describes the Sunrise Powerlink Project Transmission Upgrades which are related to the IVS project, but outside the BLM's ROW grant and CDCA Plan amendment consideration for the IVS project.

Phase II of the IVS project, and delivery of the additional renewable power generated by the total 750 MW IVS project to the San Diego regional load center, would require the construction of the 500-kV Sunrise Powerlink transmission line proposed by SDG&E. The California Public Utilities Commission (CPUC) is the lead agency for the CEQA compliance for that project and the BLM is the lead agency for the NEPA compliance for that project. An ROD for the Sunrise Powerlink Project has been issued by the BLM.

SDG&E received a Certificate of Public Convenience and Necessity from the CPUC for the Sunrise Powerlink project. Construction on the Sunrise Powerlink project is scheduled to begin mid to late 2010 once the CPUC and the BLM issue Notices to Proceed (NTPs) for each segment. The issuance of those NTPs will be contingent on SDG&E compliance with pre-construction requirements as specified by the approved mitigation measures for the project.

The Sunrise Powerlink project consists of a 150-mi long transmission line between Imperial and San Diego Counties. The major project components are:

- A new 91-mi long, single-circuit 500 kV overhead electric transmission line linking SDG&E's existing Imperial Valley Substation in Imperial County near the City of El Centro with a new 500/230 kV Central East Substation to be constructed in the San Felipe area of central San Diego County, southwest of the intersection of County Highways S22 and S2; and

- A new 59-mi long 230 kV double-circuit and single-circuit transmission line, running partly overhead and partly underground through San Diego County from the proposed new 500/230 kV Central East Substation to SDG&E's existing Peñasquitos Substation in the City of San Diego.

2.3 Agency Preferred Alternative

The BLM has identified the Agency Preferred Alternative. It is the 709 MW Alternative, which is essentially the IVS project with modifications. The BLM based its identification of the Agency Preferred Alternative on:

- The analysis of the potential environmental effects of the IVS project and the other project alternatives as documented in the SA/DEIS
- Input from agencies, groups and organizations, and members of the general public on the SA/DEIS
- Consultation with the Corps regarding minimization of avoidance of drainages on the site consistent with the requirements of the Federal Clean Water Act

The primary modifications made to the 750 MW IVS project to develop the 709 MW Agency Preferred Alternative were redistribution of the SunCatchers and other facilities on the site to minimize impacts to drainages and cultural resources by moving SunCatchers and other facilities out of and farther away from drainages and cultural resources. The following additional modifications were made:

- Reduction of the total number of SunCatchers from 30,000 to 28,360 SunCatchers
- Reduction in the amount of energy generated from 750 MW to 709 MW
- Other minor reductions or other modifications to the project features to support 709 MW and 28,360 SunCatchers

The Agency Preferred Alternative would require the following BLM actions:

- Compliance with the requirements of NEPA
- Amendment of the CDCA Plan to reflect the use of the site for solar energy generation
- Approval of a ROW grant for approximately 6,144 ac under the jurisdiction of the BLM

The analysis of the potential environmental impacts of the Agency Preferred Alternative is provided in Appendix B and is described in Chapter 4.0, Environmental Consequences. The Agency Preferred Alternative is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative (LEDPA). This proposed LEDPA is currently under detailed consideration and evaluation as described in the *Draft 404B-1 Alternatives Analysis* included in Appendix H.

2.4 300 MW Alternative

2.4.1 Overview

As shown in Table 2-1, the 300 MW Alternative is a 300 MW solar project on part of the site for the IVS project. The 300 MW Alternative would provide 12,000 SunCatchers generating 300 MW, similar to Phase I of the IVS project. The site boundary of the 300 MW Alternative is shown on Figure 2-4. The 300 MW Alternative would require a ROW grant from the BLM and would require a CDCA Plan amendment to allow solar use on the site. The general characteristics of the 300 MW Alternative are summarized in Table 2-1 and are described briefly in the following sections.

2.4.2 Structures and Facilities

The 300 MW Alternative would consist of 12,000 SunCatchers with a net generating capacity of approximately 300 MW on approximately 2,600 ac of land. The 300 MW Alternative would retain 40 percent of the SunCatchers and would affect 40 percent of the land area compared to the 750 MW IVS project. The SunCatchers and the supporting infrastructure for the 300 MW Alternative would be similar to the IVS project, except reduced to support 12,000 instead of 30,000 SunCatchers.

Similar to the IVS project, the 300 MW Alternative would transmit power to the grid through the SDG&E Imperial Valley Substation and would require supporting infrastructure including a water supply pipeline, transmission line, road access, operations facilities, substation, and hydrogen system. This infrastructure would require approximately 40 ac.

2.4.3 Construction Activities

The construction of the 300 MW Alternative would be similar to the IVS project, except scaled down for the construction of 12,000 SunCatchers and the infrastructure to support those SunCatchers. The construction activities for the 300 MW Alternative would be similar to the activities described above for the IVS project. The construction of the 300 MW Alternative would occur in one phase. The construction period for the 300 MW Alternative would be approximately the same as the construction period for Phase 1 of the IVS project.

2.4.4 Operations and Maintenance Activities

The operations and maintenance activities under the 300 MW Alternative would be the same as under the IVS project, except reduced to support 12,000 SunCatchers instead of the 30,000 SunCatchers under the IVS project.

2.4.5 Decommissioning Activities

The decommissioning of the SunCatchers and other facilities on the project site under the 300 MW Alternative would be the same as for the IVS project, except reduced to address decommissioning 12,000 instead of 30,000 SunCatchers.

2.4.6 Related Facilities

The 300 MW Alternative would not require the additional transmission capacity that would be available from the Sunrise Powerlink Project Transmission Upgrades project.

The 300 MW Alternative would use reclaimed water from the SWWTP which would be supported by the proposed upgrades that plant. The 300 MW Alternative would require less reclaimed water than the IVS project because only 12,000 and not 30,000 SunCatchers would require washing.

2.5 Drainage Avoidance #1 Alternative

2.5.1 Overview

The Drainage Avoidance #1 Alternative was developed in consultation with the Corps to reduce impacts on waters of the United States. The Drainage Avoidance #1 Alternative would prohibit permanent impacts within the 10 primary drainages within the boundary of the project site.[1]

[1] The ephemeral streams on the project site have been categorized as primary or secondary for the purposes of developing and analyzing project alternatives. The categorization is further described in Section 3.3, Biological Resources, but generally primary streams are main-stem streams originating south of the project site with a minimum Strahler order of 3 or higher and secondary streams are tributaries that originate on-site with a Strahler order of 1 or 2 (Strahler 1957).

The Drainage Avoidance #1 Alternative is shown on Figure 2-5. Although the Drainage Avoidance #1 Alternative would have the same site boundary as the IVS project, it would prohibit installation of any permanent structures within the ten primary drainages. As shown in Table 2-1, this would reduce the acreage available for development and would reduce the amount of power that could be generated on the site. This would reduce the acreage available for development from 6,500 to 4,690 ac which would reduce the generation capacity from 750 MW under the IVS project to 632 MW with a total of 25,000 SunCatchers.

The Drainage Avoidance #1 Alternative was developed in consultation with the Corps with the following considerations:

- To avoid permanent effects on all Primary Waters of the United States; those primary streams are shown on Figure 2-5.
- Tributaries to the primary streams are considered secondary streams and are not fully avoided under the Drainage Avoidance #1 Alternative.
- The Drainage Avoidance #1 Alternative would allow for limited road and transmission line crossings through primary streams, but would prohibit the installation of SunCatchers within waters of the United States.
- Transmission crossings below the existing grades on the site would have temporary impacts and road crossings would be designed to have minimal impacts. Minimal impacts means that arch crossings, bottomless culverts, or bridges would be used that allow full conveyance of hydrology and sediment and help maintain habitat connectivity for wildlife.

Under the Drainage Avoidance #1 Alternative, a ROW grant for the appropriate acreage would be issued by the BLM, and the CDCA plan would be amended to include the solar power generation facilities and transmission line as approved uses on the site in the amended CDCA Plan.

2.5.2 Structures and Facilities

The Drainage Avoidance #1 Alternative would provide 25,000 SunCatchers and would transmit power from the project site to the SDG&E Imperial Valley Substation. The Drainage Avoidance #1 Alternative would require infrastructure including a water supply pipeline, a transmission line from the site to the SDG&E Imperial Valley Substation, road access, operations facilities and structures, an on-site substation, and a hydrogen system. This infrastructure would be similar to

the structures and facilities under the IVS project, reduced to support 25,000 SunCatchers rather than the 30,000 SunCatchers in the IVS project.

2.5.3 Construction Activities

The construction of the Drainage Avoidance #1 Alternative would be similar to the IVS project, except scaled down for the construction of 25,000 SunCatchers and the infrastructure to support those SunCatchers. In addition, there would be substantial restrictions on access to, in, and across the primary drainages on the site during construction to avoid impacts to those drainages. The construction of the Drainage Avoidance #1 Alternative could occur in one or two phases. The construction period for the Drainage Avoidance #1 Alternative would be less than the construction period for the IVS project.

2.5.4 Operations and Maintenance Activities

The operations and maintenance activities under the Drainage Avoidance #1 Alternative would be the same as under the IVS project, except reduced to support 25,000 SunCatchers instead of the 30,000 SunCatchers under the IVS project. In addition, there would be restrictions throughout the life of the project on access to, in, and across the primary drainages on the site under the Drainage Avoidance #1 Alternative.

2.5.5 Decommissioning Activities

The decommissioning of the SunCatchers and other facilities on the project site under the Drainage Avoidance #1 Alternative would be the same as for the IVS project, except reduced to address decommissioning 25,000 instead of 30,000 SunCatchers. In addition, there would be restrictions on access to, in, and across the primary drainages on the site during the decommissioning under the Drainage Avoidance #1 Alternative.

2.5.6 Related Facilities

The Drainage Avoidance #1 Alternative would require the additional transmission capacity that would be available from the Sunrise Powerlink Project Transmission Upgrades project.

The Drainage Avoidance #1 Alternative would use reclaimed water from the SWWTP which would be supported by the proposed upgrades to the plant. Drainage Avoidance #1 Alternative

would require less reclaimed water than the IVS project because 25,000 and not 30,000 SunCatchers would require washing.

2.6 Drainage Avoidance #2 Alternative

2.6.1 Overview

The Drainage Avoidance #2 Alternative would prohibit development in the easternmost and westernmost parts of the project site, where the largest drainage complexes are located. The Drainage Avoidance #2 Alternative is shown on Figure 2-6. It would reduce the overall size of the project area by over 50 percent (from 6,500 ac to 3,153 ac). It would also reduce the generation capacity from 750 MW to 423 MW (retaining about 42 percent of the proposed number of SunCatchers). In the Drainage Avoidance #2 Alternative, permanent structures (SunCatchers) would be allowed within all drainages inside the revised, smaller project boundary, but the only development allowed outside of the alternative boundary would be access roads and transmission line crossings.

The Drainage Avoidance #2 Alternative was developed in consultation with the Corps with the following intent:

- The alternative would avoid the most severe effects on tributaries to the New River and the Salton Sea by avoiding the largest drainage complexes.
- It would avoid effects on all primary and secondary streams on the western and eastern edges of the project site with the exception of limited road and transmission line crossings required to serve the remaining center part of the project site.
- The Drainage Avoidance #2 Alternative would require a ROW grant from the BLM and would require a CDCA Plan amendment to allow a solar use on the site.

2.6.2 Structures and Facilities

The Drainage Avoidance #2 Alternative would provide 10,240 SunCatchers instead of the 30,000 SunCatchers under the IVS project. The Drainage Avoidance #2 Alternative would result in generation of approximately 423 MW on 3,153 ac of land. The Drainage Avoidance #2 Alternative would retain 42 percent of the SunCatchers and would affect 49 percent of the land area compared to the 750 MW IVS project. The SunCatchers and the supporting infrastructure

for the Drainage Avoidance #2 Alternative would be similar to the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

Similar to the IVS project, the Drainage Avoidance #2 Alternative would transmit power to the grid through the SDG&E Imperial Valley Substation and would require supporting infrastructure including a water supply pipeline, transmission line, road access, operations facilities, substation, and hydrogen system.

2.6.3 Construction Activities

The construction of the Drainage Avoidance #2 Alternative could occur in one or two phases. The construction activities for the Drainage Avoidance #2 Alternative would be similar to the activities described above for the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

2.6.4 Operations and Maintenance Activities

The operation and maintenance activities for the Drainage Avoidance #2 Alternative would be similar to those described for the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

2.6.5 Decommissioning Activities

The decommissioning activities for the Drainage Avoidance #2 Alternative would be similar to those described for the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

2.6.6 Related Facilities

The Drainage Avoidance #2 Alternative would/would not require the additional transmission capacity that would be available from the Sunrise Powerlink Project Transmission Upgrades project.

The Drainage Avoidance #2 Alternative would use reclaimed water from the SWWTP, which would be supported by the proposed upgrades to the plant. The Drainage Avoidance #2 Alternative would require less reclaimed water than the IVS project because 10,240 and not 30,000 SunCatchers would require washing.

2.7 No Action Alternatives

As shown in Table 2-1, the BLM considered three No Action Alternatives. Those alternatives are described in the following sections.

2.7.1 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the following would occur:

- The BLM would not approve the ROW grant for the IVS project
- The BLM would not amend the CDCA Plan

This No Action Alternative reflects rejection of the IVS project as submitted in the ROW grant application and no further action on the part of BLM.

This No Action Alternative was evaluated in the SA/DEIS under CEQA and NEPA.

2.7.2 Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the following would occur:

- The BLM would not approve the ROW grant for the IVS project
- The BLM would amend the CDCA Plan to make the project site unavailable for any future solar development

This No Action Alternative reflects rejection of the IVS project as submitted in the ROW grant application and also amends the CDCA Plan to eliminate the possibility of future use of the site for any solar projects.

This No Action Alternative was evaluated in the SA/DEIS under NEPA only.

2.7.3 Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the following would occur:

- The BLM would not approve the ROW grant for the IVS project
- The BLM would amend the CDCA Plan to make the project site available for future solar development

In essence, this No Action Alternative reflects rejection of the project as submitted in the ROW grant application and also amends the CDCA Plan to allow for the future use of the site for solar projects.

This No Action Alternative was evaluated in the SA/DEIS under NEPA only.

2.8 Comparison of the Proposed Action and the Alternatives

Tables ES-2 through ES-17, provided in the Executive Summary, summarize the impacts of the 750 MW IVS project, the 709 MW Agency Preferred Alternative, the other three Build Alternatives, the two CDCA Land Use Plan Amendment Alternatives, and the remaining No Action Alternative.

2.9 Alternatives Considered but Eliminated from Detailed Analysis

2.9.1 Rationale for Eliminating Alternatives

As discussed earlier, three alternative sites were considered for compliance under CEQA and the Federal CWA Section 404(b)(1) Guidelines. In addition, 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 technologically or economically infeasible

(3) It is inconsistent with the basic policy objectives for the management of the area (not conforming to the CDCA plan)

(4) Its implementation is remote or speculative

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

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

Not all these criteria from the *BLM Handbook* were used in eliminating alternatives from consideration as described below.

This process for eliminating these alternatives from detailed analysis complies with 40 Code of Federal Regulations (CFR) 1502.14(a) is described briefly in the following sections.

2.9.2 Alternative Sites Considered Under the California Environmental Quality Act and the Federal Clean Water Act But Not Under the National Environmental Policy Act

Three of the eight alternative sites were evaluated in detail in the SA/DEIS under CEQA only: the Mesquite Lake, Agricultural Lands, and South of Highway 98 alternative sites. Those sites are shown on Figure 2-7 and are described briefly in Table 2-5. In the SA/DEIS, all three sites were evaluated considering a 750 MW project on those sites, similar to the IVS project. While the impacts of a solar project on these three sites would be similar to those of the IVS project in many resource elements, all three alternative sites are likely to have less severe cultural and visual impacts than on the IVS project site, and two of the three alternative sites would have reduced impacts to biological resources because they are on already disturbed land.

Table 2-5 Alternative Sites Evaluated Under CEQA and Section 404 of the Federal Clean Water Act

Alternative Site	Description of Alternative	Comparison of Alternative Sites to Other Alternatives and Why Not Considered by the BLM Under NEPA
Mesquite Lake Alternative	The Mesquite Lake site is approximately 1 mi north of the City of Imperial and approximately 4 mi south of the City of Brawley. That site would be accessed via the Keystone Road exit from State Route 86R-86. The Mesquite Lake Alternative would require approximately 6,500 ac to accommodate a 750 MW solar project although it is possible that fewer than 6,500 ac could be required because this site is flatter and does not have large washes. The parcels constituting this alternative site are in private ownership.	The Mesquite Lake Alternative was evaluated in detail in the SA/DEIS under the requirements of CEQA. This alternative site was not fully evaluated by the BLM in the FEIS because the site consists of approximately 70 individual parcels owned by 52 different parties. The BLM does not own or manage any of those parcels. As a result, obtaining control over sufficient land at this site for the IVS project would be extremely remote. This site could result in substantial impacts to Corps jurisdictional waters. In addition, the use of this alternative site is speculative because the applicant has expressed no interest in attempting to acquire the land to develop the IVS project on this site and to the best of BLM's knowledge, the CEC has not received any applications proposing solar or other renewable energy projects on this site. Finally, although this site was evaluated by the CEC, it was not carried forward for analysis and evaluation under NEPA by the BLM because a project on this site would not require any action by BLM and would not meet the BLM project purpose and need. For these reasons, the BLM did not consider this to be a reasonable site alternative. This alternative was evaluated in the Corps' *Draft 404B-1 Alternatives Analysis* provided in Appendix H. However, the Mesquite Lake site was considered impracticable and unreasonable by the Corps for two reasons: the site supports approximately 716 acres of wetlands mapped by the National Wetlands Inventory that may be all or partially Corps jurisdictional wetland waters of the United States and use of the site for the IVS project would likely result in greater impacts to waters of the United States, particularly to wetlands, which are special aquatic sites under Section 404 of the Clean Water Act; and obtaining ownership or access to 70 parcels owned by 52 different parties makes securing the site for solar development impracticable.

Alternative Site	Description of Alternative	Comparison of Alternative Sites to Other Alternatives and Why Not Considered by the BLM Under NEPA
Agricultural Lands Alternative	The Agricultural Lands site is approximately 7 miles west of Calexico, adjacent to the Wisteria and Wormwood Canals. This alternative would require approximately 4,600 ac to accommodate a 750 MW solar project. The parcels constituting this alternative site are in private ownership.	The Agricultural Lands Alternative was evaluated in detail in the SA/DEIS under the requirements of CEQA. This alternative site was not fully evaluated by the BLM in the FEIS because the site consists of 7 separate and unconnected parcels owned by different parties. The BLM does not own or manage any of those parcels. In addition, using noncontiguous parcels, although viable because the SunCatchers could be constructed in separate groups, would result in the need for an unknown amount of additional acreage to accommodate the same number of SunCatchers as the IVS project and to avoid shading effects outside the boundary of this site. Site security would be far more complicated, but not impossible, than a contiguous parcel of land. This site would also require 2 separate transmission interconnections because the parcels are separated by about 6 mi. Because the site consists of 7 separate parcels owned by different parties, obtaining site control would be challenging. In addition, the use of this alternative site is speculative because the applicant has expressed no interest in attempting to acquire the land to develop the IVS project on that site and to the best of BLM's knowledge, the CEC has not received any applications proposing solar or other renewable energy projects on this site. Finally, although this site was evaluated by the CEC, this site alternative was not carried forward by the BLM in the FEIS because a project on this site would not require any action by BLM and would not meet the BLM project purpose and need. For all of these reasons, the BLM did not consider this to be a reasonable site alternative. This alternative was evaluated in the Corps' *Draft 404B-1 Alternatives Analysis* provided in Appendix H. The draft indicates this alternative would meet the Corps stated Overall Project Purpose, but may not meet the cost, logistical, and environmental screening criteria. As such, although this site alternative would be within the jurisdiction of the Corps, it was determined not to be a reasonable site location.

Alternative Site	Description of Alternative	Comparison of Alternative Sites to Other Alternatives and Why Not Considered by the BLM Under NEPA
South of Highway 98 Alternative	The South of Highway 98 Alternative site is on Federally owned land that is designated as BLM land, but it was withdrawn from BLM management by the Bureau of Reclamation in 1928. The approximately 5,000 ac site is about 4 mi southeast of El Centro. Highway 98 is the northern border of the alternative site and the United States/Mexico border is the southern border of the site. The site is between the Lake Cahuilla-D ACEC and would surround the BLM Tamarisk Long Term Visitor Area campground. It is north and south of the All-American Canal. The site is accessible via I-8 and Highway 98.	The South of Highway 98 Alternative was evaluated in detail in the SA/DEIS under the requirements of CEQA. This alternative site was not fully evaluated for NEPA purposes by the BLM in the FEIS because the site is directly adjacent to the Cahuilla-D ACEC and the Tamarisk Long-Term Visitor Area. This site would require an approximately 38 mi long water transmission pipeline from the SWWTP to the site and an approximately 30 mi transmission line to the SDG&E Imperial Valley Substation, which far exceed the public lands required for water and transmission lines for the IVS project (proposed action). In addition, the use of this alternative site is speculative because the applicant has expressed no interest in attempting to acquire the land to develop the IVS project on that site and to the best of BLM's knowledge, the CEC has not received any applications proposing solar or other renewable energy projects on this site. Finally, although this site was evaluated by the CEC, this site alternative was not considered reasonable by the BLM because a project on this site would not require any action by BLM and would not meet the BLM project purpose and need. For these reasons, the BLM did not consider this to be a reasonable site alternative. This alternative was evaluated in the Corps' *Draft 404B-1 Alternatives Analysis* provided in Appendix H. The draft indicates this alternative would meet the Corps stated Overall Project Purpose, but may not meet the cost and environmental screening criteria. As such, although this site alternative would be within the jurisdiction of the Corps, it was determined not to be a reasonable site location.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: ac = acres; ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; CEC = California Energy Commission; CEQA = California Environmental Quality Act; Corps = United States Army Corps of Engineers; FEIS = Final Environmental Impact Statement; I-8 = Interstate 8; IVS = Imperial Valley Solar; mi = miles; MW = megawatts; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement; SDG&E = San Diego Gas and Electric; SWWTP = Seeley Wastewater Treatment Plant; waters of the U.S. = waters of the United States.

Two of the three alternative sites are not located on BLM-managed land, and the third site is subject to an existing land withdrawal. All three sites would be ineffective in that the sites would not meet the BLM purpose to identify and implement renewable energy projects on BLM-managed land, would not require any action by the BLM, and are not within the available decision space of the lead agency (the BLM). In addition, the Mesquite Lake Alternative is considered to be remote and speculative because site control would need to be secured for 70 parcels from 52 land owners. The Agricultural Lands Alternative consists of 7 separate and noncontiguous parcels of land, would also have similar site control issues, and would result in two separate transmission interconnections, each of which would require additional permitting from appropriate sources. The South of Highway 98 Alternative is directly adjacent to an Area of Critical Environmental Concern (ACEC) and long-term visitor area, land designations that are not prohibited from, but do not necessarily encompass, adjacent industrial development. Also, this site has been withdrawn for Federal Bureau of Reclamation purposes which have not been revoked, thereby making its use infeasible at the present time. For these reasons, the three private land alternatives are not further evaluated in the FEIS.

2.9.3 Other Alternatives Considered but Eliminated from Detailed Analysis

In addition to the three alternative sites that were considered but not carried forward, several other sites and a number of technologies for renewable energy were also considered but not carried forward for detailed analysis in the SA/DEIS. Those alternatives are briefly described in Table 2-6 including the rationale for why they were eliminated from detailed analysis.

2.10 Overview of the Cumulative Impacts Analysis

2.10.1 Overview

This section provides information regarding cumulative projects and cumulative study areas considered in the cumulative impacts analyses conducted for the IVS project.

Preparation of a cumulative impact analysis is required under the National Environmental Policy Act (NEPA). A “cumulative impact” is an impact on the environment which results from the incremental impact of a proposed project when considered with other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such other actions (40 CFR Section 1508.7).

Table 2-6 Alternatives Considered But Eliminated from Detailed Analysis

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
900 MW Alternative	The 900 MW Alternative was the original project proposed by the applicant. This Alternative was proposed to be constructed in two phases on approximately 7,600 ac. This Alternative would be dependent on expansion of the Sunrise Powerlink Project. 36,000 SunCatchers would be provided in this Alternative. The 900 MW Alternative would impact the same drainages as the IVS project as well as additional drainages on the easternmost side of the site that flow toward the Westside Main Canal.	The project applicant's first proposal for the IVS project was for a 900 MW Alternative on a larger site at the same location as the 750 MW Alternative. Early analysis indicated that this alternative would result in substantial adverse impacts related to the ancient Lake Cahuilla, cultural resources, drainages, and biological resources among others. As a result, the applicant withdrew that proposal and submitted an application for certification to the CEC and a ROW grant application to the BLM proposing the 750 MW Alternative. The 750 MW Alternative was then identified by the CEC and the BLM as the proposed project/action and was evaluated in detail in the SA/DEIS. This alternative site was eliminated from detailed analysis because it would result in greater impacts for all resource elements. Further, implementation of a 900 MW Alternative is speculative because the applicant has expressed no interest in attempting to develop a 900 MW facility on the project site, and to the BLM and the CEC have not received any applications proposing a 900 MW facility on the IVS project site. The BLM determined that this site is ineffective in meeting the purpose and need for the project; is inconsistent with basic policy objectives and was eliminated during early application procedures; its early implementation is remote and speculative; the site is similar to the proposed action with similar, although greater environmental effects; and is, therefore, not an alternative that will avoid or minimize adverse effects of the 750 MW IVS project.
Alternative Site #1	Alternative Site #1 is in the WECO amendment area along the border between San Diego and Imperial Counties. It is north of the Fish Creek Mountains Wilderness, approximately 1 mile east of the Anza-Borrego Desert State Park, and less than 2 miles east of the Vallecito Mountain Wilderness in the Anza-	This Alternative was eliminated from detailed analysis because it would not substantially reduce the impacts of the IVS project; the ground slope on parts of the site exceed the 5 percent threshold identified for the SunCatcher solar fields; the site is distant from existing roads and would require longer access roads; and it lacks

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	Borrego Desert State Park. The Juan Bautista de Anza National Historic Trail crosses the site.	an adequate water supply. The site is in a DOD no fly/no build area and it would violate the DOD height restrictions for these zones; as such it is not a reasonable alternative within the jurisdiction of the DOD. This site is also much closer than the IVS project to the Anza-Borrego Desert State Park and the Vallecito Mountain Wilderness in the Anza-Borrego Desert State Park than the IVS site; and because of this location, implementation of this site may be remote or speculative. Further, implementation of the project on this alternative site is speculative because the applicant has expressed no interest in attempting to develop a solar facility on this site. Finally, there is a pending ROW grant application for the use of this site which, if approved, would preclude the use of this site as an alternative site for the IVS project. The BLM determined that this site is ineffective in meeting the purpose and need for the project; it may be inconsistent with basic policy objectives due to wilderness considerations; its implementation is remote and speculative because, although it is within their jurisdiction, it is an unreasonable alternative to DOD and State Park's interests; the site is similar to the proposed action with similar, although greater environmental effects; and is, therefore, not an alternative that will avoid or minimize adverse effects of the 750 MW IVS project.
Alternative Site #2	Alternative Site #2 is in the WECO amendment area along the border between San Diego and Imperial Counties. It is northeast of the Fish Creek Mountains Wilderness and is just west of and overlaps with the boundary of the West Mesa ACEC. It is approximately 1 mi east of Alternative Site #1.	This Alternative was eliminated from detailed analysis because it would not substantially reduce the impacts of the IVS project; the site is in a DOD no fly/no build area and it would violate the DOD height restrictions for these zones; the ground slope on parts of the site exceed the 5 percent threshold identified for the SunCatcher solar fields; the site is distant from existing roads and would require longer access roads; and it lacks an adequate water supply. This site also includes some privately owned parcels which may result in site acquisition and control difficulties.

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
		The site is also much closer to the Fish Creek Mountains Wilderness and the West Mesa ACEC than the IVS site. Further, implementation of the project on this alternative site is speculative because the applicant has expressed no interest in attempting to develop a solar facility on this site. Finally, there is a pending ROW grant application for the use of this site which, if approved, would preclude the use of this site as an alternative site for the IVS project. The BLM determined that this site is ineffective in meeting the purpose and need for the project; it may be inconsistent with basic policy objectives due to wilderness and ACEC considerations; its implementation is remote and speculative because, although it is within its jurisdiction, it is an unreasonable alternative to DOD interests; site control is complicated and, therefore, speculative; the site topography is incompatible with the project design; and there is pending application for the site.
Alternative Site #3	Alternative Site #3 is due west of Westmorland and southwest of the Salton Sea. It is in the WECO amendment area along the border between San Diego and Imperial Counties and approximately 1 mi southwest of the Salton Sea National Wildlife Refuge.	This alternative site was eliminated from detailed analysis because the ground slope on parts of the site exceed the 5 percent threshold identified for the SunCatcher solar fields; it lacks an adequate water supply; and it would require off-road access, additional transmission capacity, and extensive off-site transmission lines. The site is also much closer to the Salton Sea National Wildlife Refuge than the IVS site. Further, implementation of the project on this alternative site is speculative because the applicant has expressed no interest in attempting to develop a solar facility on this site. Finally, there is a pending ROW grant application for the use of this site which, if approved, would preclude the use of this site as an alternative site for the IVS project.

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
Wind Zero Site (Ocotillo)	The Wind Zero Alternative site is on approximately 944 ac of privately owned land.	This alternative site was eliminated from detailed analysis because it is not large enough, at 944 ac, to accommodate a 750 MW project; and a military training facility and motorsport race resort are already proposed for the site and undergoing environmental review. Implementation of the IVS project on this alternative site is speculative because there are previous projects proposed on it which, if approved, would preclude the use of this site as an alternative site for the IVS project and because the applicant has expressed no interest in attempting to develop a solar facility on this site.
Parabolic Trough Solar System Technology	A parabolic trough solar system converts solar radiation to electricity by using sunlight to heat a fluid, such as oil, which is then used to generate steam. The plant consists of a large field of trough-shaped solar collectors arranged in parallel rows, normally aligned on a north-south horizontal axis. A parabolic trough power plant would include parabolic trough collectors, solar boilers, heat transfer fluid oil heater. It would require approximately 3,750 to 6,000 ac to accommodate a 750 MW facility.	The use of the parabolic trough solar system technology on the IVS project site was eliminated from detailed analysis it is not the technology proposed by the applicant; it would likely require more grading than the IVS project, and it could require approximately 600 AFY of water per 100 MW of capacity if wet cooling is used and 18 AFY of water per 100 MW if dry cooling is used. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Solar Power Tower Technology	Solar power tower technology converts thermal energy to electricity by using heliostat (mirror) fields to focus energy on a boiler located on power tower receivers near the center of each heliostat array. The solar power towers can be up to 459 ft tall with additional 10 ft tall lightning rods. In general, a solar power tower power plant requires 5 to 10 ac of land per megawatt of power generated. A 750 MW solar power tower field would require from 3,750 to 7,500 ac of land.	The use of the solar power tower technology on the IVS project site was eliminated from detailed analysis because it would have towers substantially taller than any of the SunCatcher features which could conflict with aviation and military activities; it would be in the DOD Airspace Consultation Area for the nearby El Centro Naval Air Facility; and this is not the technology proposed by the applicant. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
		expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Linear Fresnel Technology	A solar linear Fresnel power plant converts solar radiation to electricity by using flat moving mirrors to follow the path of the sun and reflect its heat on the fixed pipe receivers located about the mirrors. During daylight hours, the solar concentrators focus heat on the receivers to produce steam, which is collected in a piping system and delivered to steam drums located in a solar field and then transferred to steam drums in a power block. The steam drums transferred to the power block will be used to turn steam turbine generators and produce electricity. The steam is then cooled, condensed into water, and recirculated back into the process. A 750 MW solar linear Fresnel field would require approximately 3,000 to 3,750 ac of land. The Fresnel solar technology is a proprietary technology owned by Ausra, Inc. However, Ausra, Inc. has changed its focus to being a technology and equipment provider rather than an independent power developer and owner and will focus on medium-sized (50 MW) solar steam generating systems.	The use of the linear Fresnel technology on the IVS project site was eliminated from detailed analysis because it a proprietary technology that may not be appropriate for a facility as large as 750 MW and this is not the technology proposed by the applicant. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Utility Scale Solar Photovoltaic Technology	A utility scale solar PV power generation facility would consist of PV panels that would absorb solar radiation and convert it directly to electricity. For this analysis, a utility scale project would consist of any solar PV facilities that would require transmission to reach the load center, or center of use. The land requirement for PV facilities varies from approximately 3 ac per megawatt of capacity for crystalline silicon to more than 10 ac per megawatt produced for thin film	The utility scale solar PV technology was eliminated from detail analysis because it could require slightly more water than the IVS project, it could require a larger site to accommodate a 750 MW facility, and it could require more grading than the IVS project. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	and tracking technologies. A nominal 750 MW solar PV power plant would require between 2,250 and 7,500 ac. Utility-scale solar PV installations require land with less than a 3 percent slope. Solar photovoltaics only require water for only for washing the solar PV arrays.	project site.
Distributed Solar Technology	A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity. The PV panels could be installed on building rooftops or in other disturbed areas such as parking lots or adjacent to existing substations. Installations of 750 MW distributed solar PV panels would require up to approximately 5,000 ac.	The distributed solar technology was eliminated from detailed analysis because it is uncertain whether it would be possible to achieve 750 MW of distributed solar energy from this technology on the project site; there are barriers related to interconnection with the existing electric distribution grid; this is already one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements; and it may be technologically or economically infeasible at the 750 MW scale. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Wind Energy	Wind carries kinetic energy that can be used to spin the blades of a wind turbine rotor and an electrical generator, which would then feed AC into the existing utility grid. Most state-of-the-art wind turbines operating today convert 35 to 40 percent of the wind's kinetic energy into electricity. A single 1.5 MW turbine operating at a 40 capacity factor generates 2,100 MW annually. Approximately 3,750 to 12,750 ac of land would be required for a 750 MW wind electricity power plant. Wind turbines are often over 400 ft high for 2 MW turbines.	Wind energy technology was eliminated from detailed analysis because wind energy is already is one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements, the tall wind turbines could conflict with civilian aviation operations, and this technology would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site. In addition, implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
		received any applications to use this technology on the IVS project site.
Geothermal Energy	Geothermal technologies use steam or high-temperature water from naturally occurring geothermal reservoirs to drive steam turbines or generators. There are vapor dominated resources (dry, super-heated steam) and liquid-dominated resources where various techniques are used to extract energy from the high-temperature water. It is expected that 5 to 10 small projects would be required to achieve 750 MW of geothermal energy. The land requirement for geothermal energy facilities could range from 900 to 6,000 ac to achieve 750 MW of energy. Additionally, while the power plant, cooling towers and brine ponds would likely be fenced, there would not likely be fencing required for the wells and well pads. In that 5 to 10 geothermal facilities would be required for provision of 750 MW, depending on the locations of the new facilities, more transmission lines and switchyards may be required for grid interconnection, when compared to the IVS project.	Geothermal energy technology was eliminated from detailed analysis because there are no geothermal resources on the project site and this technology would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Biomass Energy	Biomass energy generation creates electricity by burning organic fuels in a boiler to produce steam, which then turns a turbine. Biomass can also be converted into a fuel gas such as methane and burned to generate power. Wood is the most commonly used biomass for power generation. Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing wastes, and construction and urban wood wastes. Techniques to convert these fuels to electricity include direct combustion, gasification, and anaerobic fermentation. Biomass facilities do not require the extensive amount of land required by other renewable energy sources, but they generate only small amounts of electricity, in the range of 3 to 10 MW.	Biomass energy technology was eliminated from detailed analysis because most biomass facilities produce only small amounts of electricity in the range of 3 to 10 MW; it would not meet the project objectives related to the California Renewable Portfolio Standard; between 75 and 250 facilities would be needed to generate 750 MW which could result in impacts substantially greater than the IVS project; and this technology would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site. In addition, implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	Biomass facilities also generate significant air emissions and require numerous truck deliveries to supply the plants with the biomass waste materials. In waste-to-energy facilities, there is some concern regarding the emission of toxic chemicals, such as dioxin, and the disposal of the toxic ash that results from biomass burning.	received any applications to use this technology on the IVS project site.
Tidal Energy	The oldest technology to harness tidal power for the generation of electricity involves building a dam, known as a barrage, across a bay or estuary that has large differences in elevation between high and low tides. Water retained behind a dam at high tide generates a power head sufficient to generate electricity as the tide ebbs and water released from within the dam turns conventional turbines. To produce practical amounts of power for tidal barrages, a difference between high and low tides of at least 5 meters is required.	Tidal energy technology was eliminated from analysis because it has not been demonstrated and proven at the scale that would be required to generate 750 MW, particularly with Pacific tides; there are no water bodies near the IVS project site that experience tides; and this technology would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Wave Energy	Wave power technologies have been used for nearly 30 years. Setbacks and a general lack of confidence have contributed to slow progress towards proven devices that would have a good probability of becoming commercial sources of electrical power using wave energy. The highest energy waves are concentrated off the western coasts of the United States in the 40- to 60-degree latitudes range north and south. The power in the wave fronts varies in these areas between 30 and 70 kW/m with peaks to 100 kW/m. Many wave energy devices are still in the research and development stage, and would require large amounts of capital to get started. Additional costs from permitting and environmental assessments also make wave energy problematic	Wave energy technology was eliminated from analysis because it has not been demonstrated and proven at the scale that would be required to generate 750 MW, particularly with Pacific tides; there are no water bodies near the IVS project site that generate waves; and this technology would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Natural Gas	Natural gas power plants typically consist of combustion turbine generators, heat recovery steam generators, a steam turbine generator, wet or dry cooling towers, and associated	Natural gas was eliminated from detailed analysis because it would not meet the basic project objective of generating renewable power to help meet California's renewable energy

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	support equipment. An interconnection with a natural gas pipeline, a water supply, and electric transmission are also required. A gas-fired power plant generating 750 MW would generally require less than 80 ac of land.	needs; it results in greenhouse gas emissions; it would not reduce dependence on nonrenewable petroleum resources; and this energy source would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Coal	Traditional coal-fired plants generate large amounts of greenhouse gases. New clean coal technology includes a variety of energy processes that reduce air emissions and other pollutants from coal-burning power plants. The Clean Coal Power Initiative is providing government co-financing for new coal technologies that help utilities meet the Clear Skies Initiative to cut sulfur, nitrogen, and mercury pollutants by nearly 70 percent by 2018. However, these technologies are not yet in use.	Coal was eliminated from detailed analysis because it would not meet the basic project the objective of generating renewable power to help meet California's renewable energy needs; it would generate greenhouse gases; it is not a feasible alternative in California; and this energy source would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Nuclear Energy	Due to environmental and safety concerns, California law currently prohibits the construction of new nuclear power plants in the state until the California Energy Commission finds that the Federal government has approved and there exists demonstrated technology for the permanent disposal of spent fuel from these facilities.	Nuclear energy was eliminated from detailed analysis because the permitting of new nuclear facilities in California is not currently allowable by law and, therefore, this technology is infeasible.
Conservation and Demand-Side Management	Conservation and demand-side management consist of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution.	Conservation and demand-management were eliminated from detailed analysis because they alone are not sufficient to address all of California's energy needs, and would not provide the renewable energy required to meet the California Renewable Portfolio Standard requirements. In addition, these types of measures are outside the jurisdiction and authority of the BLM to implement.

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
Drainage Avoidance #3 Alternative (to avoid Waters of the United States)	This was the third avoidance alternative developed in consultation with the Corps to avoid waters of the United States, typically referred to as the No Federal Action Alternative when the Corps is the lead agency. This alternative would require avoidance of all permanent effects on waterways on the project site. All the drainages on the site have been determined to be under the jurisdiction of the Corps. This alternative would allow limited crossings of streams by roads and electric collection system lines, but would not allow any permanent facilities (i.e., SunCatchers) to be installed within the boundaries of Waters of the United States. Primary and secondary streams were throughout the project site. As a result, the alternative would allow development only in the centermost part of the site. This alternative would result in elimination of 6,580 SunCatchers and would isolate an additional 19,976 SunCatchers, making them infeasible to construct and operate. There would remain about 3,444 SunCatchers (retaining only about 10 percent of the proposed SunCatchers). Permanent structures would be allowed on only about 10 percent of the project site. This alternative would result in the generation of less than 100 MW of energy.	The Drainage Avoidance #3 Alternative was eliminated from detailed analysis because, by avoiding all Corps jurisdictional waters of the U.S., which form a complex web of streams across the project site, permanent structures would be limited to approximately 10 percent of the project site resulting in the generation of less than 100 MW of energy. Therefore, from the applicant's perspective, this alternative would be considered infeasible because it would not meet the applicant's objectives for the project which include generating 750 MW of energy.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: ac = acres; AC = alternating current; ACEC = Area of Critical Environmental Concern; AFY = acre-feet/year; BLM = United States Bureau of Land Management; CEC = California Energy Commission; Corps = United States Army Corps of Engineers; DOD = United States Department of Defense; ft = feet; IVS = Imperial Valley Solar; kV/m = kilowatts per meter; mi = miles; MW = megawatt; PV = photovoltaic; ROW = right-of-way; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement; WECO = Western Colorado Desert Routes of Travel Designations.

NEPA states that cumulative effects can result from "…individually minor but collectively significant actions taking place over a period of time" (40 CFR Section 1508.7). Under NEPA, both context and intensity are considered. When considering the intensity of an effect, it is necessary to consider "…whether 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 Section 1508.27(b)(7).

The cumulative impacts analyses based on the cumulative projects and study areas described here are provided in Chapter 4.0, Environmental Consequences, by environmental parameter.

This section describes the overall approach and context for the cumulative impacts analysis. It also describes the study areas and relevant projects considered in the analyses for the different environmental parameters. Chapter 4, Environmental Consequences, provides detailed discussions of the potential for cumulative adverse impacts, by environmental parameter, following the overall approach, individual study areas, and relevant cumulative projects described in this section.

2.10.2 Cumulative Impact Approach

The DEIS and this FEIS evaluated cumulative impacts of the IVS project and the Agency Preferred Alternative within the analysis of each resource area, following these steps:

(1) Define the geographic scope of cumulative impact analysis for each discipline, based on the potential area within which impacts of the IVS project could combine with those of other projects.

(2) Evaluate the effects of the IVS project in combination with past and present (existing) projects in the study area.

(3) Evaluate the effects of the IVS project with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

Each of these steps is described below.

2.10.2.1 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 IVS project site 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 of a proposed project, but not beyond the scope of the direct and indirect effects of that proposed project.

In addition, each project in a region will have its own implementation schedule, which may or may not coincide or overlap with the construction schedule for the IVS project. This is a consideration for short-term impacts from the IVS project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the IVS project.

2.10.2.2 Project Effects in Combination with Past, Present and Foreseeable Future Projects

Each discipline evaluates the impacts of the IVS project on top of the current baseline; the past, present (existing) and future projects near the IVS project site. The Council on Environmental Quality (CEQ) states that the intensity, or severity, of the cumulative effects should consider the magnitude, geographic extent, duration and frequency of the effects. 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.

Reasonably foreseeable projects that could contribute to the cumulative effects scenario for the IVS project depend on the extent of resource effects, but could include projects in the immediate Plaster City area as well as other large renewable projects in Imperial County, or the greater California desert.

2.10.3 Past, Present and Reasonably Foreseeable Projects

In order to provide a basis for the cumulative impacts analysis for each discipline, the cumulative projects scenario described in detail in Section B.3 in the SA/DEIS provides detailed information on the potential cumulative solar and other development projects in the project area.

Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the IVS project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on Figures 2-8 and 2-9 and in Tables 2-7 and 2-8. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.

- Foreseeable future projects in the immediate Plaster City area, as shown on Figure 2-10 and Tables 2-9 and 2-10. Table 2-9 presents existing projects in this area and Table 2-10 presents future foreseeable projects in the Plaster City Area. Both tables provide the project name, types, locations, and status.

Table 2-7 Renewable Energy Projects in the California Desert District

BLM Field Office	Number of Projects and Acreage	Total MW
Solar Energy		
Barstow Field Office	• 20 projects (150,217 acres)	13,176 MW
El Centro Field Office	• 9 projects (62,989 acres)	4,820 MW
Needles Field Office	• 19 projects (284,680 acres)	15,700 MW
Palm Springs Field Office	• 19 projects (127,561 acres)	11,400 MW
Ridgecrest Field Office	• 5 projects (31,743 acres)	2,935 MW
TOTAL – California Desert District	• **72 projects (649,440 acres)**	**48,531 MW**
Wind Energy		
Barstow Field Office	• 25 projects (171,560 acres)	N/A
El Centro Field Office	• 8 projects (49,506 acres)	N/A
Needles Field Office	• 8 projects (111,931 acres)	N/A
Palm Springs Field Office	• 4 projects (5,852 acres)	N/A
Ridgecrest Field Office	• 16 projects (94,872 acres)	N/A
TOTAL – California Desert District	• **61 projects (433,721 acres)**	**N/A**

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 2010).

Table Key: BLM = United States Bureau of Land Management; MW = megawatts; N/A = not applicable

Table 2-8 Renewable Energy Projects on State and Private Lands

Renewable Resource	Project Name	Location	Status
Solar	Abengoa Mojave Solar Project (250 MW solar thermal)	San Bernardino County, Harper Lake	Under environmental review
Solar	Rice Solar Energy Project (150 MW solar thermal)	Riverside County, north of Blythe	Under environmental review
Solar	3 MW solar PV energy generating facility	San Bernardino County, Newberry Springs	MND published for public review
Solar	Blythe Airport Solar 1 Project (100 MW solar PV)	Blythe, California	MND published for public review
Solar	First Solar's Blythe (21 MW solar PV)	Blythe, California	Under construction
Solar	California Valley Solar Ranch (SunPower) (250 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
Solar	LADWP and OptiSolar Power Plant (68 MW solar PV)	Imperial County, SR-111	Under environmental review
Solar	Topaz Solar Farm (First Solar) (550 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
Solar	AV Solar Ranch One (230 MW solar PV)	Antelope Valley, Los Angeles County	Under environmental review
Solar	Bethel Solar Hybrid Power Plant (49.4 MW hybrid solar thermal and biomass)	Seeley, Imperial County	Under environmental review
Solar	Mt. Signal Solar Power Station (49.4 MW hybrid solar thermal and biomass)	8 miles southwest of El Centro, Imperial County	Under environmental review
Wind	Alta-Oak Creek Mojave Project (up to 800 MW)	Kern County, west of Mojave	Under environmental review
Wind	PdV Wind Energy Project (up to 300 MW)	Kern County, Tehachapi Mountains	Approved
Wind	Solano Wind Project Phase 3 (up to 128 MW)	Montezuma Hills, Solano County	Under environmental review
Wind	Hatchet Ridge Wind Project	Shasta County, Burney	Under construction
Wind	Lompoc Wind Energy Project	Lompoc, Santa Barbara County	Approved
Wind	Pacific Wind (Iberdrola)	McCain Valley, San Diego County	Under environmental review

Renewable Resource	Project Name	Location	Status
Wind	TelStar Energies, LLC (300 MW)	Ocotillo Wells, Imperial County	Under environmental review
Geothermal	Buckeye Development Project	Geyserville, Sonoma	Under environmental review
Geothermal	Orni 18, LLC Geothermal Power Plant (49.9 MW)	Brawley, Imperial County	

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 2010).

Table Key: MND = Mitigated Negative Declaration; MW = megawatts; PV = photovoltaic; SR-111 = State Route 111.

Table 2-9 Existing Projects in the Plaster City Area

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
1	U.S. Naval Air Facility El Centro	West Mesa	U.S. Navy	Existing	El Centro Naval Air Facility U.S. Naval Reservation Target 103 and Parachute Drop Zone. Desert range is used for air-to-ground bombing, rocket firing, strafing, dummy drops and mobile land target training.
2	Recreation Activities	West Mesa FTHL Management Area	BLM	Ongoing	The area is primarily used for the conservation of Flat Tailed Horned Lizard. OHV activity is limited to designated routes of travel only within this area. There are occasional groups that visit this area for trail rides.
3	Recreation Activities	Yuha Desert ACEC	BLM	Ongoing	The area is primarily used for the conservation of Flat Tailed Horned Lizard, and archaeological resources. OHV activity is limited to designated routes of travel only within this area. The Juan Bautista De Anza National Historic Trail runs through this area. This region is also rich with paleontological and geological resources. Visitors come to this area to find fossils and explore the area's geology and enjoy the desert landscape. Some schools and universities have visited this region for educational field trips and research.
4	U.S. Gypsum Mining	Plaster City	Gypsum Mining	Existing; Quarry is undergoing expansion FEIR released Jan 2008.	Existing gypsum plant; proposal to expand active gypsum quarry undergoing environmental review. Gypsum quarry is located 26 miles northwest of the plant located at Plaster City.
5	California State Prison, Centinela	2302 Brown Road, Imperial, CA	State of California	Existing	Existing prison opened in 1993 which covers 2,000 acres.

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
6	Recreation Activities	Superstition Mountain and Plaster City Open Area	BLM	Ongoing	Cross-country OHV use is permitted within the boundaries of this area. Approximately 20 to 30 Permitted and Organized events occur on the Plaster City Open Area and Superstition Mountain Open Area. Many of these events are competitive OHV races involving as many as 100 riders and several hundred spectators. The area is a popular OHV riding area with high visitation during the cool season and on holiday weekends.

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 2010).

Table Key: ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; FEIR = Final Environmental Impact Report; FTHL= flat-tailed horned lizard; OHV = off-highway vehicle.

Table 2-10 Future Foreseeable Projects in the Plaster City Area

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
A	Mount Signal Solar Power Station	Imperial Valley – Need further detail.	MMR Power Solutions, LLC	PPA with SDG&E. SDG&E filed request for approval of PPA with CPUC Energy Division and approval was granted 9/18/08.	New 49.4 MW solar thermal hybrid project due online in December 2009.
B	Green Path	From the Imperial Valley Substation to the Dixieland Substation	IID	Draft EIS in progress, Scoping Report available. Preparing Draft EIS: Draft Alternatives Working Paper is available. Construction expected to begin 2012.	Green Path 230 kV Project (Board Approved). The upgrade would serve solar, wind and biomass generators near the Imperial Valley Substation, and act as a back-up to the current 'S' line and creating greater system reliability to the entire IID system. Construct two new 230 kV electrical substations on 10 acres with a 230 kV transmission line connection.
C	Wind Zero – Training Facility	Ocotillo	Wind Zero Group, Inc.	Wind Zero Group, Inc. submitted plans to Imperial County May 2008.	Wind Zero proposes to build a 400-acre training facility for law enforcement, government, college and public near Ocotillo (south of Interstate 8 and north of SR 98) on land that it purchased in 2007. Wind Zero proposes to use the additional 600-acre site to build a 6.1-mile road coarse and racetrack country club.
D	Atlas Storage Facility	Ocotillo townsite/ Imperial Highway	Atlas Storage Centers	Atlas Storage Centers	RV storage facility related to new water well on 5.3 acre parcel currently vacant land.
E	Mixed-Use Development	South of Ross Avenue/east of Austin	Miller Burson Development Design and Engineering	Responses to Draft EIR under preparation.	570 single-family lots and a school site on 160 acres. COZ No. 05-02, EIR No. 05-02.

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
F	Mixed-Use Development	West of La Brucherie/east of Austin and north of West Evan Hewes Highway	Las Aldeas Specific Plan Westshore (Lerno) Development	City of El Centro staff working on staff report and conditions of approval.	2,641 residential lots, general commercial (27.46 acres), heavy commercial (10.17 acres), 2 school sites for a total of over 680 acres.
G	Mixed-Use Development	Southeast corner of 8th Street (Clark Road) about 630 feet south of Horne Road	Michael H Galey/The Kennedy Group	MND proposal being reviewed by applicant	65 single-family lots on over 36 acres.
N/A	Update General Plan	El Centro city-wide	City of El Centro	Tentative schedule for PC meeting of January 6, 2009	Update Circulation Element of General Plan; Update Housing Element of General Plan;
N/A	Update Park Master Plant	El Centro city-wide	City of El Centro	Scheduled for CC meeting December 17, 2008	Preparation of Parks & Recreation Facilities Master Plan
H	Mixed-Use Development	South of Interstate 8 between La Brucherie and Lotus Canal and Drain	Lotus Ranch (Gary McPhetrige)	On hold per applicant request (June 2008)	658 single family lots, detention basin on over 213 acres.
I	Mixed-Use Development	East of Austin Road and north of W. Ross Rd.	Desert Village #6	Approved – granted extension of 2 years for filing final map of Subdivision Map (August 2008)	110 single-family units, 125 multiple-family units, 5.5 acres of commercial development

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
J	Mixed-Use Development	East of Austin Road and south of Orange Avenue	Courtyard Villas	EIR in process	21.5 acres, 54 single-family units
K	Mixed-Use Development	1002 East Evan Hewes Highway	Colace Brothers Industrial Park	Approved by City of El Centro March 2008	15 parcel subdivision on APN 054-280-024 and 054-280-048
L	Sunrise Powerlink Project	From Imperial County to San Diego County	SDG&E	FEIR/EIS released, awaiting Commission and BLM decision	Approximately 120-mile long 500 kV transmission line from Imperial Valley Substation to Sycamore Canyon Substation, BLM preferred route would bisect the proposed IVS project site
M	Ocotillo Express Wind Facility	Immediately east of the proposed site	Pattern Energy Group	Under environmental review	Construct an approximately 550 MW wind facility immediately east of the proposed project on approximately 15,000 acres.
N	Pedestrian Fence 225 and Pedestrian Fence 70	Along the U.S./Mexico Border	U.S. Department of Homeland Security	Under construction	Construct a tactical infrastructure project that plans to construct approximately 225 miles of primary pedestrian fencing along the southwest border of the United States.
O	Mixed Use–Recreation	Plaster City Open Area; Yuha; Superstition Mountain Open Area	BLM	The recreational use of the open areas, especially OHV use, is expected to continue and potentially grown in the foreseeable future.	Cross-country OHV use is permitted within the boundaries of Plaster City Open Area and Superstition Mountain Open Area, Limited Use area is allowed in Yuha which offers washes and trails. Organized and permitted OHV events occur at both Plaster City Open Area and Superstition Mountain Open Area.
P	West-wide Energy Corridor	Throughout the Imperial Valley on BLM land	DOE	Final Programmatic EIS was published Nov. 28; awaiting Record of Decision	Section 368 of the Energy Policy Act of 2005 (the Act), Public Law 109-58 (H.R. 6), enacted August 8, 2005, directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior (the Agencies) to designate under their respective authorities corridors

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
					on Federal land in 11 Western States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors).
Q	Seeley Wastewater Treatment Plant Upgrade	New River Boulevard, Seeley, California	Seeley County Water District	Engineering plans required, completion of project expected March 2010.	The IVS project applicant would finance an upgrade to the existing facility to allow it to meet the Title 22 water quality standards.

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 2010).

Table Key: APN = Assessor's Parcel Number; BLM = United States Bureau of Land Management; CC = City Council; CPUC = California Public Utilities Commission; DOE = United States Department of Energy; EIR = Environmental Impact Report; EIS = Environmental Impact Statement; FEIR = Final Environmental Impact Report; IVS = Imperial Valley Solar; kV = kilovolts; MND = Mitigated Negative Declaration; MW = megawatts; OHV = off-highway vehicle; PPA = Power Purchase Agreement; RV = recreational vehicle; SDG&E = San Diego Gas and Electric; SES = Stirling Energy Systems; SR-98 = State Route 98.

These projects are defined within a geographic area that has been identified by the BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under the California Environmental Quality Act (CEQA) and/or NEPA. Even if the cumulative projects have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in the DEIS and this FEIS.

Additionally, the following additionally reasonably foreseeable projects have been identified and were incorporated in the cumulative impacts analysis for the IVS project.

2.10.3.1 Solar Programmatic Environmental Impact Statement

On May 29, 2008, the United States Department of Energy (DOE) and Department of Interior issued a Notice of Intent in the Federal Register (73 Federal Register [FR] 30908) to prepare a Solar Programmatic Environmental Impact Statement (Solar PEIS). The Solar PEIS is a NEPA environmental review focused on the proposed development and implementation of agency-specific programs to establish environmental policies and mitigation strategies for solar energy development in six western states. The agencies' proposals are in response to Executive Order 13212, Actions to Expedite Energy-Related Projects, which directs Federal executive departments and agencies to take appropriate actions "…to expedite projects that will increase the production, transmission, or conservation of energy…" and to implement Title II, Section 211 of the Energy Policy Act of 2005 (Public Law 109-58) which directs the United States Secretary of the Interior to seek to have approved non-hydropower renewable energy projects on public lands with a generation capacity of at least 10,000 MW within 10 years of enactment of the Energy Policy Act.

Through this Solar PEIS, the DOE is considering whether to develop a solar energy program of environmental policies and mitigation strategies that would apply to the deployment of DOE supported solar energy projects on BLM-administered lands or other Federal, State, tribal or private lands. The BLM is also considering whether: (1) to establish a BLM-wide solar energy program to supplement or replace existing BLM solar development policy, and to amend land use plans in a six-state study area to adopt the new program; (2) to identify BLM-administered land in the study areas that may be environmentally suitable for solar energy development and land that would be excluded from such development; and (3) whether designation by BLM of additional electricity transmission corridors on BLM-administered lands is necessary to facilitate utility-scale solar energy development. There are 24 Solar Energy Study Areas evaluated in the Solar PEIS, encompassing about 670,000 ac in Nevada, Arizona, California, Colorado, New Mexico, and Utah.

The Draft Solar PEIS is scheduled for publication in late 2010 and the Final EIS is anticipated to be completed by late 2011. The BLM's processing of ROW grant applications for solar energy projects received after the Solar PEIS is completed may be affected by changes in the BLM solar energy program and policies. However, until the Solar PEIS is completed and the BLM issues a Record of Decision concerning its content, the BLM will continue to process the IVS ROW grant application and all other active solar applications that have been filed pursuant to existing agency policies and procedures.

For more information on the Solar PEIS, refer to the BLM web site: http://solareis.anl.gov/index.cfm.

2.10.3.2 Seeley Wastewater Treatment Plant Upgrades

The IVS project anticipates receiving reclaimed water from the Seeley Wastewater Treatment Plant (SWWTP). The applicant would finance upgrades to the existing SWWTP so the effluent from the plant meets Title 22 requirements for recycled water. In exchange, the IVS project would have access to at least 150,000 gal and up to 200,000 gal of reclaimed water per day for use in all project construction and operation activities except for potable water.

The Seeley County Water District (SCWD) serves customers in the town of Seeley in unincorporated Imperial County with certain utility services, including, without limitation, sewage collection and water treatment services. Currently, sewage collected in Seeley's system is treated and, thereafter, flows into the New River. The SCWD has signed a Will Serve Letter with Tessera Solar to provide reclaimed water to the IVS project. An agreement between SCWD and the applicant was signed at the SCWD Board Meeting on May 18, 2009. As a result of the terms of that Agreement, the sewage treatment facilities at the SWWTP will be upgraded to treat 250,000 gallons per day (gpd) and 200,000 gpd of that treated effluent (Title 22 water) would be made available to the IVS project. This effluent level reflects SCWD's future influent levels expected due to population growth in its service area and would be provided to the IVS project if requested.

The SCWD is the lead agency for the SWWTP upgrades under CEQA, and is responsible for approving the upgrades to the facility. The SCWD prepared a Mitigated Negative Declaration (MND) for the upgrade project in 2009. In early 2010, the SCWD initiated preparation of an Environmental Impact Report (EIR) for the proposed upgrades. The Final EIR is expected in late 2010.

The SCWD and the applicant have identified an engineer to design the upgrades to the SWWTP. Following approval of the Final EIR for the upgrade project, the engineer will complete

the design for the upgrades to make it possible for the SWWTP to supply up to 200,000 gpd of treated effluent to the IVS project. It was anticipated that the bid for the design of the improvements would be completed in late 2010.

2.10.4 Cumulative Impact Study Areas and Projects

This section outlines the geographic scope of the cumulative analysis and past, present and reasonably foreseeable projects that potentially contribute to the cumulative conditions associated with each environmental parameter considered in the DEIS and this FEIS.

2.10.4.1 Air Quality

Geographic Scope of Analysis

The geographic analysis area for air quality is the Imperial County part of the Salton Sea Air Basin.

Past, Present and Reasonably Foreseeable Future Projects

Air quality analysis by its nature is a cumulative assessment of potential air pollutant emissions on both the regional and local levels. For regional analysis, the projections for criteria pollutants have been established by the Imperial County Air Pollution Control District (ICAPCD) based on planned population and job growth in that air district. Additionally, new development projects and stationary sources that have potential for emissions of criteria air contaminants within 6 mi of the IVS project site that are either under construction, or have received permits to be built or operate in the foreseeable future were identified. Of a total of 31 projects identified in Tables 2-1 to 2-4, 24 are outside a 6 mi radius of the IVS project site and were, therefore, not included in the list of cumulative emission sources. Six projects were eliminated due to their annual permitted emission increases being negative, negligible, or less than 5 tons per year (tpy). The last project was eliminated because it is indefinitely on hold. Therefore, it has been determined that there are no planned stationary sources requiring a cumulative modeling analysis within a 6-mi radius of the IVS project site.

In addition to the projects assessed in consultation with the ICAPCD, there are a number of other large development projects proposed in the region. For example, there are 2 large wind projects proposed on BLM land within a few miles of the IVS project site in addition to large wind projects proposed in Mexico, south of the IVS project site. In addition, there are 7 large solar projects proposed on BLM land within the service area of the BLM El Centro Field Office.

Refer to Section 4.2, Air Quality, for the detailed air quality cumulative impacts analysis based on the geographic analysis area and relevant projects described above.

2.10.4.2 Biological Resources

Geographic Scope of Analysis

The geographic area considered for cumulative impacts on biological resources is flat-tailed horned lizard (FTHL) habitat in California. The historical range of the FTHL in California encompassed 1.8 to 2.2 million ac mainly in Imperial County, but also in central Riverside County and eastern San Diego County. Its current range is only approximately 50 percent of its historical range.

Past and Present Projects

Numerous past and present activities have affected biological resources within the geographic scope of analysis for the IVS project. These activities include off-highway vehicle (OHV) recreation, mineral and sand/gravel extraction, operation of military and institutional facilities, agricultural practices, urban development, and construction of the United States/Mexico international border fence.

Over the past 200 years, southern California deserts have been subject to major human-induced changes that have threatened native plant and animal communities by habitat loss, fragmentation, and degradation. Some of the most conspicuous threats are those activities that have resulted in large scale habitat loss as a result of urbanization, agricultural uses, landfills, military operations, mining activities, and activities that fragment and degrade habitats such as roads, OHV activity, recreational use, and grazing. The introduction of nonnative plant species and increases in predators has also contributed to population declines and range contractions for many special status plant and animal species.

Approximately 50 percent of the historical range of the FTHL has been destroyed mainly by agricultural and urban development. Agricultural practices, in particular irrigation, have altered FTHL habitat to such a degree to be unsuitable for this species. Agricultural and urban development have also affected other wildlife and native plants by reducing native habitat. Other projects and activities that have reduced the range of FTHL in the Imperial Valley include the United States Gypsum Corporation (Plaster City) processing plant north of the IVS project site along Evan Hewes Highway; sand and gravel operations north of Evan Hewes Highway, 5 mi west of Ocotillo and east of the IVS project site; OHV use at the Plaster City Open OHV Area

north of Evan Hewes Highway and limited use on designated routes on the IVS site; intensive agricultural production and urban development east of the IVS project site; and former sand and gravel operations on the IVS project site in the past, which has been subsequently reclaimed. The international fence at the United States/Mexico border approximately 8 mi south of the IVS project site is under construction. Even though that border fence would eliminate illegal drive-through traffic, thus lessening impacts to FTHL along the border, the large scale habitat loss associated with the currently proposed projects negates FTHL population gains in the region. In this context, the potential of the IVS project to contribute to cumulative significant loss, degradation, and fragmentation of habitat, including loss of connectivity for desert plants and wildlife, including FTHL and other special status species was assessed.

Reasonably Foreseeable Future Projects

Biological resources are expected to be affected by reasonably foreseeable future projects. These projects, which are located in FTHL habitat, include all the future foreseeable projects in the Plaster City area listed in Table 2-10 and the proposed renewable energy projects in Table 2-8.

The proposed solar and wind energy projects have the potential to further reduce and degrade native plant and animal populations, in particular special status species such as FTHL. In comparison to solar projects which would permanently impact most of the IVS project site for FTHL, wind energy projects would not impact the FTHL habitat to the same extent as permanent ground disturbance would be limited to the bases of wind turbines and the corresponding access roads for maintenance. However, the wind turbines would impact birds and bats.

Refer to Section 4.3, Biological Resources, for the detailed biological resources cumulative impacts analysis based on the geographic analysis area and relevant projects described above.

2.10.4.3 Climate Change

As discussed in detail in Section 4.4, Climate Change, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would result in a net reduction in greenhouse gas (GHG) emissions across the electricity system by reducing emissions from power plants and they would not worsen existing conditions related to GHG. As a result, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would result in beneficial effects related to GHG and would not contribute to adverse cumulative GHG impacts. Therefore, no detailed discussion regarding the geographic area of analysis, past and present projects, and

reasonably foreseeable future projects is provided relative to climate change. Refer to Section 4.4, Climate Change, for the detailed climate change cumulative impacts analysis.

2.10.4.4 Cultural and Paleontological Resources

Geographic Scope of Analysis

The geographic area considered for cumulative impacts on cultural resources is the Plaster City area.

The geographic area considered for cumulative impacts related to paleontology is, essentially, the western half of the Colorado Desert geomorphic province of extreme south-central California, bordering Mexico. More specifically, the area includes all of Imperial County west of Range 17 and a small part of the extreme east end of San Diego County. It is these areas that roughly define the limits of the Lake Cahuilla Formation and the older, underlying Palm Springs Formation.

Past and Present Projects

For this analysis, the projects, developments or ongoing activities that have or may have effects on cultural resources include recreational activities on BLM land, mineral extraction, and operation of military and institutional uses. The most relevant projects or developments for effects on cultural resources are the United States Naval Air Facility El Centro, the recreation activities in the BLM West Mesa FTHL Management Area and the BLM Yuha Desert ACEC, the California State Prison, Centinela, and the recreation activities in the BLM Superstition Mountain and Plaster City Open Area. Because cultural resources are nonrenewable, the removal or destruction of any resource results in a net loss of resources. Additionally, existing development in the Plaster City area and the surrounding areas has resulted in the removal or destruction of cultural resources, resulting in a net loss of resources in these areas.

Given the general scarcity of fossils, even within known fossil bearing strata, the likelihood of prior damage to paleontological resources is modest but unavoidable. The existing projects most likely to have damaged paleontological resources in geological formations similar to those on the IVS project site include mineral extraction activities and operation of institutional uses.

Reasonably Foreseeable Future Projects

Cultural and paleontological resources are also expected to be affected by the following reasonably foreseeable future renewable energy and urban development projects:

- Mount Signal Solar Power Station
- Green Path – construction of 2 electrical substations
- Wind Zero – Training Facility
- Atlas Storage Facility – RV storage facility
- 7 mixed-use developments
- Update of the City of El Centro General Plan
- Update the City of El Centro Park Master Plan
- Sunrise Powerlink Project – installation of a 120-mile 500 kV transmission line
- Ocotillo Express Wind Facility – a 15,000 ac wind facility
- Pedestrian Fence 225 and Pedestrian Fence 70 – constructed along the United States/Mexico international border
- Mixed Use – Recreational OHV use area
- West-wide Energy Corridor – designation of energy corridors and facilities
- Seeley Wastewater Treatment Plant Upgrade

Refer to Section 4.5, Cultural and Paleontological Resources, for the detailed cultural and paleontological resources cumulative impacts analysis based on the geographic analysis area and relevant projects described above.

2.10.4.5 Fire and Fuels Management

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives were reviewed to determine if they could contribute to a cumulative adverse impact on the fire and emergency service capabilities of the El Centro Fire Department (EFD). It was determined through review of the plans, application of the applicable laws, ordinances, regulations, and standards, and the measures, identified in Section 4.6, Fire and Fuels Management, applicable to these Alternatives, that they would not contribute to cumulative adverse impacts to existing fire protection and prevention services.

The potential risk of added fire fuels on the IVS project site would be localized and would not contribute to a cumulative fire and fuels issue for the area because measures are included in the IVS project, the Agency Preferred Alternative, and the other Build Alternatives to ensure that the growth of additional fuels on the project site is regularly checked and controlled.

Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to fire and fuels. In summary, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would not contribute to cumulative adverse impacts related to fire and fuels management.

Refer to Section 4.6, Fire and Fuel Management, for the detailed cumulative impacts analysis for these parameters.

2.10.4.6 Geology, Soils, Topography, Mineral Resources, and Seismic

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives were reviewed to determine if they could contribute to a cumulative adverse impact related to geological hazards. The analysis indicated that these Build Alternatives would not contribute to cumulative adverse impacts related to geological hazards. The IVS project, the Agency Preferred Alternative, and the other Build Alternatives include the use of private well water under an existing permit to extract that water. As a result, these alternatives will not withdraw more water than allowed under that existing permit and, therefore, will not contribute to a cumulative adverse impacts related to regional subsidence as a result of groundwater withdrawal. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to geological hazards.

Refer to Section 4.7, Geology, Soils, Topography, Mineral Resources, and Seismic, for the detailed cumulative impacts analysis for these parameters.

2.10.4.7 Grazing, and Wild Horses and Burros

Geographic Scope of Analysis

Because there are no Herd Management Areas (HMAs) or Herd Areas (HAs) on or in the immediate vicinity of the IVS project site, the geographic scope for the analysis of cumulative impacts related to horses and burros is the Imperial Valley region. Cumulative impacts would

result in changes in the existing environment which, due to their nature or location, would result in interference with BLM's management of HMAs. The cumulative analysis of wild horses and burros was conducted using BLM maps of HMAs and HAs.

There are no grazing lands on or in the vicinity of the IVS project site. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to grazing lands.

Past and Present Projects

The Chocolate-Mule Mountains HMA is the closest HMA, which is approximately 58 mi northeast of the IVS project site near the California-Arizona border. This area is not notable for substantial past or present development.

Reasonably Foreseeable Future Projects

Plaster City Area

Because there are no HMAs or HAs are in the vicinity of the IVS project site, it is unlikely that future projects in the Plaster City area would impact horses or burros, or BLM HMAs and HAs.

California and Arizona Deserts

As shown in Figures 2-8 and 2-9, two energy applications are proposed in areas surrounding the Chocolate-Mule Mountains HMA.

Refer to Section 4.8, Grazing, and Wild Horses and Burros, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.8 Land Use and Corridor Analysis

Geographic Extent – Land Use Compatibility

The geographic scope for the analysis of cumulative impacts related to land use compatibility and Laws, Ordinances, Regulations and Standards (LORS) compliance are the local and regional communities and sensitive receptors. Cumulative impacts could result from the physical

division of an established community or from conflict with any applicable land use plan, policies, or regulation adopted for the purposed of avoiding or mitigating environmental impacts.

Past and Present Projects – Land Use Compatibility

Past and present projects in the vicinity of the IVS project site include recreational activities proposed by the BLM, quarry activities in Plaster City, and the State prison.

Reasonably Foreseeable Future Projects – Land Use Compatibility

Plaster City Area

Proposed projects in the vicinity of the IVS project site and Plaster City include the West-Wide Energy Corridor, which generally follows I-8 east from the San Diego-Imperial County border to the edge of the Yuha Basin. In addition to the IVS project, a wind energy development project immediately east of the IVS project site and the Mount Signal Solar Power Station, northeast of the project site, are proposed. The Sunrise Powerlink Project follows the entire length of the proposed energy corridor west into San Diego County and east to southern Arizona. Additional projects include a 225 mi long pedestrian fence along the United States/Mexico international border, and mixed-use developments.

California and Arizona Deserts

As shown in Tables 2-7 and 2-8, renewable energy projects are proposed throughout the California Desert District. As shown in Table 2-7, 72 solar energy projects are proposed on 649,440 ac of California desert lands and 61 wind energy projects are proposed on 433,721 ac of California desert lands.

Refer to Section 4.9, Land Use and Corridor Analysis, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.9 Noise and Vibration

Geographic Scope of Analysis

The geographic scope for considering cumulative noise impacts on sensitive receptors for the IVS project is the area immediately surrounding the potentially sensitive receptors in the vicinity of the IVS project site.

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in vibration effects at any appreciably distance from the IVS project site. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to vibration.

Past and Present Projects

Any existing cumulative noise conditions are included in the existing ambient noise survey conducted at the sensitive receptors.

Reasonably Foreseeable Future Projects

Plaster City Area

There are no future foreseeable projects close enough to IVS project site to contribute to cumulative noise impacts on sensitive receptors near the IVS project site.

California and Arizona Deserts

Energy and other projects beyond the immediate vicinity of the IVS project site would be outside the geographic scope of consideration for noise impacts of the IVS project and would not contribute to cumulative noise levels at the sensitive receptors.

Refer to Section 4.10, Noise and Vibration, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.10 Public Health and Safety, and Hazardous Materials

Geographic Scope of Analysis

The geographic area considered for cumulative impacts from the use of hazardous materials is the area within 1 mi of the boundary of the IVS project site.

Past and Present Projects

There are no past or currently operating projects in the geographic area for the hazardous materials cumulative impacts analysis beyond a few low level recreation uses on the IVS project site.

Reasonably Foreseeable Future Projects

There are no reasonably foreseeable future projects in the geographic area for the hazardous materials cumulative impacts analysis.

Past, Present and Reasonably Foreseeable Projects

There are no current or future projects within a 6 mi radius of the IVS project site that could contribute to a public health cumulative impact.

Refer to Section 4.11, Public Health and Safety, and Hazardous Materials, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis areas and relevant projects described above.

2.10.4.11 Recreation

Geographic Scope of Analysis – Recreation

The geographic scope for the analysis of cumulative impacts related to recreation includes the local and regional recreation facilities in the Imperial Valley. Recreational facilities primarily include OHV and camping sites throughout Imperial County. They also include the Juan Batista de Anza National Historic Trail (Anza Trail) which crosses Imperial County and also crosses part of the IVS project site.

Past and Present Projects – Recreation

Existing recreation areas throughout the County are abundant and maintained by the BLM and California State Parks. However, past and present developments, particularly Department of Defense sites, occupy substantial amounts of undeveloped areas throughout the County which preclude recreation activities on those lands.

Reasonably Foreseeable Future Projects – Recreation

Plaster City Area

Proposed projects in the vicinity of the IVS project site and Plaster City include the West-Wide Energy Corridor, which generally follows I-8 east from the San Diego–Imperial County border to the edge of the Yuha Basin. A wind energy development project is proposed immediately east of the IVS project site, the Mount Signal Solar Power Station is proposed northeast of the IVS project site, and the Sunrise Powerlink Project follows the entire length of the proposed energy corridor west into San Diego County and east to southern Arizona. Additional projects include a 225 mi long pedestrian fence along the United States/Mexico international border, and mixed-use developments.

California and Arizona Deserts

As shown in Tables 2-7 and 2-8, renewable energy projects are proposed throughout the California Desert District. As shown in Table 2-7, a total of 72 solar energy projects are proposed on 649,440 ac of California desert lands and 61 wind energy projects are proposed on 433,721 ac of California desert lands.

Refer to Section 4.12, Recreation, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.12 Socioeconomics and Environmental Justice

Geographic Scope of Analysis

The geographic extent of cumulative impacts related to socioeconomics is Imperial County. This is an appropriate area to consider because socioeconomic factors such as public services and benefits would be in Imperial County. The geographic extent for the labor force would be Imperial, San Diego, Riverside, and San Bernardino Counties.

Past and Present Projects

Figure 2-10 and Table 2-9 show past projects which may have contributed to cumulative socioeconomic impacts in the study area.

Reasonably Foreseeable Future Projects

Reasonably foreseeable projects that could contribute to cumulative effects related to socioeconomics include projects in the immediate Plaster City area as well as other large renewable projects in Imperial County and the California desert. These projects are shown on Figures 2-8 and 2-9. There are a number of projects in the immediate area around Plaster City whose impacts could combine with those of the IVS project. As shown on Figure 2-9 and in Tables 2-7 and 2-8, solar and wind development applications for use of BLM land have been submitted for approximately 107,000 ac of the land in the Imperial County part of the California Desert Conservation Area.

Refer to Section 4.13, Socioeconomics and Environmental Justice, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.13 Special Designations

The IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in impacts to Wilderness Areas or Special Areas. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to these special designations.

The geographic area of analysis, past and present projects, and reasonably foreseeable future projects related to cumulative impacts on farmlands are provided in the following sections.

Geographic Scope of Analysis

The geographic scope for the analysis of cumulative impacts related to agricultural and range lands include agricultural land in Imperial County and range lands under BLM jurisdiction throughout the Imperial Valley region. Cumulative impacts include the conversion of agricultural and/or range lands to other uses. Projects that can affect agriculture and range lands consist of all construction activities, and residential, and industrial developments in the region. For this analysis, in addition to the projects listed in Tables 2-9 and 2-10, data obtained from the Natural Resources Conservation Service (NRCS), the United States Census, and the BLM online

geographic information system (GIS) maps were considered when identifying activities that could contribute to cumulative impacts on agricultural and range lands.

Past and Present Projects

A wide variety of past and present development projects contribute to the cumulative conditions for agricultural lands. The majority of the agricultural land in Imperial County is surrounded by the county's largest urban areas. According to the United States Census, from 1990 to 2000 the population of El Centro increased by 20.5 percent, and from 2000 to 2007 the population increased by 4.8 percent. This is an example of the steady growth that has occurred throughout that part of Imperial County. As a result, past and present residential, commercial, and industrial development has contributed to the conversion of existing agricultural land to other land uses.

The BLM has no range land allotments in Imperial County. The BLM rangeland allotments closest to the IVS project site are in San Diego County throughout the areas between the Cleveland National Forest, Cuyamaca Rancho State Park, and Anza-Borrego Desert State Park. There are also a number of range land allotments in Riverside County near the California-Arizona border. Past and present projects contributing to the cumulative conditions for rangelands including industrial and military developments.

Reasonably Foreseeable Future Projects

Plaster City Area

As shown on Figure 2-10 and Table 2-10, about 12 multiple mixed-use developments are proposed for approximately 1,200 ac of undeveloped and agricultural land in El Centro east of the IVS project site.

California Desert

As shown in Tables 2-7 and 2-8, renewable energy projects are proposed throughout the California desert lands. As shown in Table 2-7, a total of 72 solar energy projects are proposed on 649,440 ac of California desert lands land and 61 wind energy projects are proposed on 433,721 ac California desert lands. This represents a worst-case scenario because all of these projects would not be ultimately developed. In addition, according to the BLM online GIS data, 1 proposed solar energy project in Riverside County may traverse the Ford Dry Lake allotment, and 1 solar energy project would be in the vicinity of the Keoughs allotment.

Refer to Section 4.14, Special Designations, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.14 Traffic and Transportation

Geographic Scope of Analysis

The geographic boundary of the cumulative traffic analysis consisted of the following locations on the road network in the vicinity of the IVS project site:

- I-8 westbound (WB) ramp/Imperial Highway
- I-8 eastbound (EB) ramp/Imperial Highway
- State Route 98 (SR-98)/Imperial Highway
- I-8 WB Ramp/Dunaway Road
- I-8 EB Ramp/Dunaway Road
- I-8 west of Imperial Highway
- I-8 east of Dunaway Road
- SR-98 west of Imperial Highway
- Imperial Highway: North of SR 98
- Evan Hewes Highway east of Imperial Highway
- Evan Hewes Highway west of Dunaway Road
- Dunaway Road north of the I-8 westbound ramps

Past, Present and Reasonably Foreseeable Future Projects

In addition to the IVS project, the following have been identified as planned developments in the vicinity of the IVS project site: Miller Burson Development, Las Aldeas Specific Plan, Lotus

Ranch, Desert Village #6, Courtyard Villas, Colace Brothers Industrial Park, and Desert Springs Resort.

Refer to Section 4.15, Traffic and Transportation, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.15 Visual Resources

Geographic Scope of Analysis

The geographic study areas for potential cumulative adverse visual impacts are:

- Cumulative impacts in the immediate IVS project viewshed, essentially comprising foreseeable future projects in southwestern Imperial County within a distance of 5 or fewer mi of the IVS project site

- Cumulative impacts of foreseeable future projects in the southern California Colorado (Sonoran) desert, or other broad basin of the project's affected landscape type, most notably including proposed solar and other renewable energy projects. The widest applicable basin of cumulative effect at this scale would include all the southern California desert, or the Sonoran and Mojave Desert landscapes extending into neighboring states. The region-wide focus is appropriate because the affected landscape type, the southern California Desert, has been specifically identified as a resource of concern in the CDCA Plan, the California Desert Protection Act of 1994, and the proposed 2010 California Desert Protection Act. In each case, the scenic value of the desert landscape is cited as a primary reason for its conservation.

Past and Present Projects

For this analysis, the following past and present projects or developments are considered most relevant to effects on visual resources: the U.S. Gypsum Plaster City Plant, and existing recreational activities and related land disturbances in the Plaster City OHV Open Area.

The U.S. Gypsum Plant is the most visually prominent existing feature in the viewshed and detracts from its scenic intactness, presenting a prominent man-made, industrial feature into views within a radius of a few miles, including the IVS project site. The Plaster City OHV Open Area would interact visually with the IVS project in two ways: by providing a recreational viewer group into the visual foreground and middle ground that would be exposed to views of the IVS

project; and by the general visual disturbance of the terrain in the immediate vicinity of the OHV Open Area due to periodic heavy OHV use that accounts for its moderate to moderately low visual quality. Both these projects would interact with the IVS project by contributing to the overall disturbed character of their local cumulative viewshed.

Reasonably Foreseeable Future Projects

Visual resources are also expected to be affected by the following reasonably foreseeable future projects: the GreenPath 230 kV Upgrade Project, the Sunrise PowerLink Project, and the Ocotillo Express Wind Facility; the West-wide Energy Corridor. Each of these would be located in the immediate local viewshed of the IVS project.

Refer to Section 4.16, Visual Resources, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

2.10.4.16 Hydrology, Water Use, and Water Quality

Geographic Scope of Analysis

The geographic area considered for cumulative impacts related to soil and water resources are described as follows:

- **Soil Erosion Potential by Water and Wind:** Soil erosion can be affected by any development or land alteration. The effects occur in terms of air quality as well as general deterioration of the land surface with potential regional effects. Cumulative impacts would be evaluated over all BLM managed lands in southern, including the California Desert Conservation Area.

- **Surface Water Quality:** Project-related surface water quality impacts potentially extend from the IVS project site to the Imperial County agricultural area and into the Salton Sea. The geographic extent of cumulative impacts would encompass those areas south of the Salton Sea that could potentially have similar extent. Imperial County is considered the geographical extent of surface water quality impacts for the cumulative impacts assessment.

- **Groundwater Quality:** Groundwater quality impacts could affect the Coyote Wells Valley and Imperial Valley Groundwater Basins. These basins are the geographic area for impacts cumulative analysis for groundwater.

- **Hydrology/Flooding:** Hydrology and flooding impacts are generally managed on a county-wide or city-wide level. Imperial County is considered the geographic extent of hydrology and flooding impacts for the cumulative impacts analysis.

- **Water Supply:** With the exception of a minimal amount of water for potable uses, the IVS project would use reclaimed water that is currently discharged into the New River.

Past and Present Projects

For this analysis, the following past or present projects or developments are considered most relevant to effects on soil and water resources: all the renewable energy projects listed in Table 2-7 and all the recreational, military, institutional and mineral extraction activities listed in Table 2-9.

Reasonably Foreseeable Future Projects

Soil and water resources are also expected to be affected by the all of the reasonably foreseeable future projects listed in Table 2-10.

Refer to Section 4.17, Hydrology, Water Use, and Water Quality, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

Chapter 3
Affected Environment

3.1 Introduction

This chapter describes those environmental parameters that will or may be adversely impacted by the Imperial Valley Solar (IVS) project (i.e., the 750 MW Alternative), the Agency Preferred Alternative (i.e., the 709 MW Alternative), and/or the other alternatives described in Chapter 2, Alternatives Including the Proposed Action. Particular emphasis is placed unique resource values on and in the vicinity of the project site for the IVS project site in Imperial Valley, California that could potentially be affected. This chapter describes the affected environment for the impact assessments and evaluations provided in Chapter 4, Environmental Consequences. The focus of the analysis is resources which may potentially be impacted by the actions of the United States Bureau of Land Management (BLM) related to amending the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended) to allow for solar facilities on the project site and approval of a right-of-way (ROW) grant to allow the project applicant to construct and operate the IVS project on the project site.

For the purpose of preparing the impact analyses in Chapter 4, the baseline affected environment is defined as conditions at the time the BLM published the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) (October 17, 2008) to assess the potential effects of approving an amendment to the CDCA Plan and approving a ROW grant for the IVS project on the site.

3.1.1 Imperial Valley Solar Project Overview

The site for the proposed IVS project is approximately 6,500 acres (ac) in southwest Imperial County. The site consists of an estimated 6,140 ac of public land administered by the BLM, and approximately 360 ac of private land under the jurisdiction of Imperial County. The northern boundary of the IVS project site is adjacent to Imperial County Route S80 and Plaster City, and the southern boundary is adjacent to Interstate Highway 8 (I-8).

The IVS project site currently consists of undeveloped desert land and recreation sites. Two private parcels of land, one owned by a recreational vehicle club and one by a private landowner, are surrounded by the IVS project site. These parcels are not a part of the IVS project. Access to these parcels of land would be provided via the arterial road system within

the IVS project site. The western boundary of the project site is in the Imperial County Ocotillo/Nomirage Planning Area.

Facilities associated with the IVS project, the majority of which are on the IVS project site or the construction laydown areas, include:

- Approximately 30,000, 38-foot (ft) diameter solar dish Stirling systems (i.e., SunCatchers) and associated equipment and infrastructure;
- An off-site 12-mile (mi) long, 6-inch (in) diameter water pipeline approximately 30 in underground in the existing Evan Hewes Highway right-of-way (ROW), which would transport reclaimed water west from the Seeley Wastewater Treatment Plant (SWWTP) to the IVS project site;
- An onsite, 24.3 ac Main Services Complex generally in the center of the site for administration and maintenance activities, which would include buildings, parking and access roads;
- An onsite, 6 ac 750 megawatt (MW) substation generally in the center of the site near the Main Services Complex;
- A 10.3 mi long, 230 kilovolt (kV) transmission line intended to connect to the existing San Diego Gas & Electric (SDG&E) Imperial Valley Substation southeast of the project site and which would parallel the existing Southwest Powerlink transmission line ROW; and
- Approximately 27 mi of unpaved arterial roads, 14 mi of unpaved perimeter roads, and 234 mi of unpaved access roads on the IVS project site.

In addition, during construction, there will be two construction laydown areas. One is a 100 ac laydown area east of the IVS project site on Dunaway Road and north of I-8. The second laydown area is approximately 11.0 ac on the IVS project site, just south of the Main Services Complex.

3.1.2 Terminology Used

Terminology related to environmental conditions, resources, impacts, and evaluation is used throughout Chapters 3 and 4 in the discussions of the environmental resource setting and the potential effects of the IVS project on those resources. Two sections of this Final Environmental Impact Statement (FEIS) provide consolidated references regarding the terminology used:

- **List of Acronyms and Abbreviations:** This is provided at the beginning of the FEIS following the table of contents. All acronyms and abbreviations used in the FEIS are defined in that section. In addition, for the convenience of the reader, all acronyms and abbreviations are spelled out the first time they are cited in the individual sections in Chapters 3 and 4.

- **Glossary:** The Glossary is provided in Chapter 11. The glossary defines technical terms used in the FEIS. Those definitions are also typically provided in the FEIS at the first location there those terms are used.

3.1.3 Geographic Setting

The IVS project site is in Imperial County, California. The County covers 4,597 square miles in the southeast part of the State of California. Approximately 50 percent of Imperial County lands are undeveloped and under Federal ownership and jurisdiction. Currently, 20 percent of the nearly 3 million ac of land in Imperial County is irrigated for agricultural purposes, most notably in the central part of the County in the Imperial Valley.

The IVS project site is in the Yuha Desert geomorphic subprovince of the Colorado Desert geomorphic province. The site is near the eastern shoreline of ancient Lake Cahuilla. The east part of the site is primarily composed of gently sloping undisturbed desert. The west part of the site is characterized by more rolling terrain or badlands with intermittent incised drainages. Overall, the site slopes northeast toward the regional topographic low point at the Salton Sea.

The area surrounding the IVS project site consists of undeveloped desert land with small rural communities. Immediately adjacent to the northern boundary of the IVS project site is the USG Corporation Gypsum Wallboard Manufacturing Facility, known as Plaster City. The Plaster City Off-highway Vehicle (OHV) Open Area includes two staging areas, Plaster City East and Plaster City West; both are popular primitive camping and day use areas. Immediately adjacent to the southern boundary of the IVS project site is the Yuha Desert Area of Critical Environmental Concern (ACEC), which is also under BLM jurisdiction.

The community of Edgar is approximately 0.5 mi east of the IVS project site and the Imperial Lakes Specific Plan residential development is approximately 0.7 mi northeast of the IVS project site. The communities of Coyote Wells and Ocotillo are approximately 1.3 and 2.9 mi west of the nearest boundary of the IVS project site, respectively.

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3.2 Air Quality

3.2.1 Climate and Meteorology

The Imperial Valley part of Imperial County has a typical desert climate characterized by low precipitation, hot summers, mild winters, low humidity, and strong temperature inversions. Total rainfall in El Centro averages nearly 3 inches per year with about 55 percent of the total rainfall occurring during the winter rainy season and 35 percent occurring during late summer and early fall thunderstorms. The Imperial Valley is in the rain shadow of the Santa Rosa and San Jacinto Mountains, which greatly reduces the winter season rainfall in comparison with coastal and mountain areas to the west.

The highest monthly average high temperature in the Imperial Valley is 107 degrees Fahrenheit (°F) in August and the lowest average monthly low temperature is 41°F in January and December. A wind rose from the Imperial County Airport for 1991 to 1995 indicates the highest wind direction frequencies for the annual, winter, spring, and fall periods are from the west through the southwest. Winds blowing in the east-southeast direction also frequently occur in the summer.

3.2.2 Applicable Regulations, Plans, and Policies

The Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA) each require the establishment of standards for ambient concentrations of air pollutants, called ambient air quality standards (AAQS). The State AAQS, established by the California Air Resources Board (ARB), are typically lower (more protective) than the Federal AAQS established by the United States Environmental Protection Agency (EPA).

The State and Federal AAQSs are listed in Table 3-1. The averaging times for the various AAQS, defined as the times over which they are measured, range from 1 hour to an annual average. The AAQS are read as a concentration, in parts per million (ppm), or as a weighted mass of material per volume of air, in milligrams or micrograms of pollutant per cubic meter of air (mg/m^3 or $\mu g/m^3$, respectively).

Table 3-1 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
O_3	8 Hour	0.075 ppm (147 µg/m^3) (Table Note 1)	0.070 ppm (137 µg/m^3)
O_3	1 Hour	—	0.09 ppm (180 µg/m^3)
CO	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
CO	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
NO_2	Annual	0.053 ppm (100 µg/m^3)	0.03 ppm (57 µg/m^3)
NO_2	1 Hour	0.100 ppm (188 µg/m^3) (Table Note 2)	0.18 ppm (339 µg/m^3)
SO_2	Annual	0.030 ppm (80 µg/m^3)	—
SO_2	24 Hour	0.14 ppm (365 µg/m^3)	0.04 ppm (105 µg/m^3)
SO_2	3 Hour	0.5 ppm (1300 µg/m^3)	—
SO_2	1 Hour	—	0.25 ppm (655 µg/m^3)
PM_{10}	Annual	—	20 µg/m^3
PM_{10}	24 Hour	150 µg/m^3	50 µg/m^3
$PM_{2.5}$	Annual	15 µg/m^3	12 µg/m^3
$PM_{2.5}$	24 Hour	35 µg/m^3	—
SO_4	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
Lead	Calendar Quarter	1.5 µg/m^3	—
H_2S	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

Table Source: California Air Resources Board (ARB 2009).

Table Note 1: The 2008 standard is shown above, but as of September 16, 2009 this standard is being reconsidered. The 1997 8-hour standard is 0.08 ppm.

Table Note 2: The EPA is in the process of implementing this new standard, which is expected to become effective in 2010. This standard is based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations. Due to this regulation not yet being effective, with a corresponding lack of guidance on impact analysis and existing background concentrations, an impact assessment for compliance with this standard was not conducted.

Table Key: µg/m^3 = micrograms per cubic meter; CO = carbon monoxide; EPA = United States Environmental Protection Agency; H_2S= hydrogen sulfides; mg/m^3 = milligrams per cubic meter; NO_2 = nitrogen dioxide; O_3 = ozone; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; ppm = parts per million; SO_2 = sulfur dioxide; SO_4 = sulfates.

In general, an area is designated as attainment if the concentration of a particular air pollutant does not exceed the AAQS for that pollutant. An area is designated as nonattainment for a pollutant if the AAQS for that pollutant is exceeded. Where there is insufficient ambient data available to support designation as attainment or nonattainment, an area can be designated as unclassified. An unclassified area is normally treated the same as an attainment area for regulatory purposes. An area could be attainment for one air pollutant and nonattainment for another, or attainment for a Federal AAQS and nonattainment for the State AAQS for the same air pollutant.

Section 176 of the 1990 CAA Amendments requires the EPA to promulgate rules to ensure Federal actions conform to the appropriate State Implementation Plan (SIP). These rules, known together as the General Conformity Rule (40 Code of Federal Regulations [CFR] 51.850-860 and 40 CFR 93.150-160) require any Federal agency responsible for an action in a nonattainment area to determine that the action conforms to the applicable SIP or is exempt from the General Conformity Rule requirements. This means Federally supported or funded activities will not: (1) cause or contribute to any new air quality standard violation; (2) increase the frequency or severity of any existing standard violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone.

An action would conform to an SIP and be exempt from a conformity determination if an applicability analysis shows that the total direct and indirect emissions from the project construction and operation activities would be less than the specified emission rate thresholds, known as de minimum limits, and that emissions would be less than 10 percent of the area's emissions budget.

3.2.3 Existing Air Quality

Specific geographic areas are classified as either attainment or nonattainment areas for identified air pollutants based on a comparison of measured ambient air quality data with the Federal and State AAQS for those pollutants. Responsibility for attaining and maintaining AAQS in California is divided between the ARB and regional air pollution control districts. The Imperial Valley Solar (IVS) project site is in Imperial County, California, in the Salton Sea Air Basin (SSAB), which is governed by the Imperial County Air Pollution Control District (ICAPCD).

The Imperial County part of the SSAB is designated as nonattainment for Federal and State ozone (O_3) AAQS, and the Federal and State AAQS for particulate matter less than 10 microns in size (PM_{10}). This area is designated as attainment or unclassified for the State and Federal AAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate

matter less than 2.5 microns in size ($PM_{2.5}$). Table 3-2 summarizes the attainment/ nonattainment status for the applicable State and Federal AAQS.

Table 3-2 Federal and State Attainment Status for the Project Site in Imperial County

Pollutant	Federal Attainment Status (Table Note 1)	State Attainment Status (Table Note 1)
O_3	Nonattainment (Table Note 2)	Moderate Nonattainment
CO	Attainment	Attainment
NO_2	Attainment (Table Note 3)	Attainment
SO_2	Attainment	Attainment
PM_{10}	Serious Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment (Table Notes 2 and 4)	Nonattainment

Table Sources: California Air Resources Board (ARB 2009) and the United States Environmental Protection Agency (EPA *2009).*

Table Note 1: Attainment = Attainment or Unclassified.

Table Note 2: Updated June 2010 (LSA Associates, Inc.).

Table Note 3: Nitrogen dioxide attainment status for the new Federal 1-hour NO_2 standard is scheduled to be determined by January 2012.

Table Note 4: Site is adjacent to and upwind of the EPA proposed limited $PM_{2.5}$ nonattainment area surrounding the developed areas south of the Salton Sea.

Table Key: CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_2 = sulfur dioxide.

Ambient air quality monitoring data for the Imperial Valley for O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, and SO_2 for 2004 to 2008, compared to most restrictive applicable AAQSs standards, at the most representative monitoring stations for each pollutant are shown in Table 3-3. The 1-hour and 8-hour O_3, and 24-hour PM_{10} data for 1999 to 2008 are shown on Figure 3-1. All data are from the El Centro-9th Street monitoring station (no O_3 data from that station is available for 1999 and 2000), with the exception of the SO_X data, which are from the Calexico-Ethel Street monitoring station. Some of the data from the Calexico-Ethel Street monitoring station have abnormally high values. One of the likely reasons for the high values at this location is due to long wait times associated with vehicles crossing the United States (US)/Mexico international border at this location. Diesel-fired trucks that do not have to meet the stringent EPA environmental standards and idle for long periods of time near the Calexico monitoring stations could cause high localized criteria pollutant levels. Another likely reason is due to pollutants transported across the border from Mexicali, Mexico.

Table 3-3 Criteria Pollutant Summary Maximum Ambient Concentrations (ppm or µg/m^3)

Pollutant	Averaging Period	Units	2004	2005	2006	2007	2008	Limiting AAQS (Table Note 1)
O_3	1-hour	ppm	0.096	0.122	0.129	0.118	0.135	0.09
O_3	8-hour	ppm	0.08	0.097	0.101	0.094	0.084	0.07
PM_{10} (Table Note 2)	24-hour	µg/m^3	57	81	146	117	88.2	50
PM_{10} (Table Note 2)	Annual	µg/m^3	35.4	33.9	43.3	47.5	32.7	20
$PM_{2.5}$ (Table Note 2)	24-hour	µg/m^3	25.1	22.1	27.1	18.2	17	35
$PM_{2.5}$ (Table Notes 2, 3)	Annual	µg/m^3	9.7	9.4	8.8	8.5	8.1	12
CO	1-hour	ppm	2	4.2	3.1	2.5	3.1	20
CO	8-hour	ppm	1.17	2.23	2.59	1.67	1.71	9.0
NO_2	1-hour	ppm	0.067	0.065	0.066	0.071	0.081	0.18
NO_2	Annual	ppm	0.013	0.011	0.011	0.011	0.009	0.03
SO_2	1-hour	ppm	0.003	0.002	0.192	0.014	0.018	0.25
SO_2	24-hour	ppm	0.003	0.002	0.041	0.004	0.007	0.04
SO_2	Annual	ppm	0.000	0.000	0.001	0.001	0.001	0.03

Table Sources: California Air Resources Board (ARB 2009) and United States Environmental Protection Agency (EPA 2009).

Table Note 1: The limiting AAQS are the most stringent of the State or Federal AAQS for each pollutant and averaging period.

Table Note 2: Exceptional particulate matter concentration events, such as those caused by wind storms, are not shown where excluded by the EPA; however, some exception events may still be included in the data presented.

Table Note 3: Annual average $PM_{2.5}$ data shown are the Federal annual average. State annual average data are not available.

Table Key: µg/m^3 = micrograms per cubic meter; AAQS = ambient air quality standards; CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; ppm = parts per million; SO_2 = sulfur dioxide.

The El Centro-9th Street monitoring station is approximately 15 miles (mi) east of the project site, 9 mi north of the US/Mexico international border, and 12 mi northwest of the center of Mexicali, Mexico. The Calexico-Ethel Street monitoring station is approximately 20.5 mi east/southeast of the project site, 0.7 mi north of the US/Mexico international border, and only 3 mi northwest of the center of Mexicali. Therefore, the Calexico monitoring station is more strongly influenced by pollution from Mexicali and less representative of the ambient conditions at the project site than the El Centro-9th Street monitoring station.

3.2.3.1 Ozone

O_3 is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted oxides of nitrogen (NO_X) and hydrocarbons (volatile organic compounds [VOCs]) in the presence of sunlight to form O_3. As Table 3-3 and Figure 3-1 indicate, the 1-hour and 8-hour O_3 concentrations measured in Imperial County continue to exceed the both the State and Federal AAQS. The collected air quality data (not shown) indicate that the O_3 violations occurred primarily during sunny and hot periods that are typical during May through September.

3.2.3.2 Nitrogen Dioxide

The entire SSAB is classified as attainment for the State 1-hour and Federal annual NO_2 AAQS. Approximately 90 percent of NO_X emitted from combustion sources is nitric oxide (NO) and the remainder is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO_2 typically occur during the fall. Winter atmospheric conditions can trap emissions near the ground level, but lack substantial photochemical activity (sunlight); therefore, NO_2 levels are relatively low in the winter. In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO_2. The NO_2 concentrations in the project area are well below the State and Federal AAQS.

3.2.3.3 Carbon Monoxide

The part of the Imperial Valley in which the project site is located is classified as attainment for the State and Federal 1-hour and 8-hour CO AAQS. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap emitted pollutants at or near the ground. The CO concentrations at El Centro and, more specifically, Calexico are highly influenced by pollutant emissions in Mexicali, Mexico. As a result, although the CO AAQS are exceeded periodically in Calexico as a result of pollutants transported from Mexico, Imperial County as a whole is attainment for CO. Additionally, the frequency of pollutant transport CO AAQS exceedances dropped substantially over time with no monitored exceedances since 2006. The area around and including the project site, in comparison with major urban areas, does not have substantial mobile source emissions. As a result, based on the monitoring at the El Centro-9th Street station, the local CO concentrations are expected to be well below the State and Federal AAQS.

3.2.3.4 Particulate Matter and Fine Particulate Matter

PM_{10} can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere.

The area surrounding and including the project site is nonattainment for Federal and State PM_{10} AAQS. Table 3-3 and Figure 3-1 show recent PM_{10} and $PM_{2.5}$ concentrations in the area. Figure 3-1 shows fluctuating concentration patterns and clear exceedances of the State 24-hour PM_{10} standard. It should be noted that an exceedance does not necessarily mean a violation of an AAQS or nonattainment, because exceptional events do occur and some of those events, which do not count as violations, may be included in the data in Table 3-3 data. Exceptional events could include periods of Santa Ana winds. Nonetheless, the SSAB is designated as nonattainment for both State and Federal PM_{10} AAQS.

Fine particulate matter ($PM_{2.5}$) is derived mainly from either the combustion of materials or from precursor gases (SO_X, NO_X, and VOCs) through complex reactions in the atmosphere. $PM_{2.5}$ consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small part of organic and inorganic compounds.

The entire SSAB is classified as attainment for Federal AAQS and unclassified for State AAQS. This divergence in the PM_{10} and $PM_{2.5}$ attainment status indicates that a substantial fraction of the ambient particulate matter levels is most likely due to localized fugitive dust sources, such as vehicle travel on unpaved roads, agricultural operations, and/or wind-blown dust.

3.2.3.5 Sulfur Dioxide

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. The entire SSAB is classified as attainment for State and Federal SO_2 AAQS. Sources of SO_2 emissions in the SSAB come from a wide variety of fuels: gaseous, liquid, and solid; however, total SO_2 emissions in the SSAB are limited due to the limited number of major stationary sources and California's substantial reduction in motor vehicle fuel sulfur content. In the area surrounding and including the project site, SO_2 concentrations are well below the State and Federal AAQS, and the values measured in 2006 that are substantially higher than typical short-term SO_2 concentrations are believed to be primarily due to transport from Mexico because the SO_2 emission sources in Calexico are minimal in comparison to those in Mexicali.

3.2.4 Background Concentrations

The background ambient air concentrations in Table 3-4 were used in the modeling and impacts analysis for the IVS project. The maximum criteria pollutant concentrations from the past 3 years of available data that were collected at the monitoring stations in Imperial County, excluding known exceptional events, were used to determine the recommended background values.

Table 3-4 Recommended Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting AAQS (Table Note 1)	Percent of Standard
NO_2	1 hour	152.6	339	45%
NO_2	Annual	20.9	57	37%
CO	1 hour	3,565	23,000	16%
CO	8 hour	2,878	10,000	29%
PM_{10}	24 hour	146	50	292%
PM_{10}	Annual	47.5	20	238%
$PM_{2.5}$	24 hour (Table Note 2)	27.1	35	77%
$PM_{2.5}$	Annual	8.8	12	73%
SO_2	1 hour	47.2	655	7%
SO_2	3 hour	42.4	1,300	3%
SO_2	24 hour	18.4	105	18%
SO_2	Annual	2.7	80	3%

Table Sources: California Air Resources Board (ARB 2009), the United States Environmental Protection Agency (EPA 2009), and California Energy Commission staff analysis (2010).

Table Note 1: The limiting AAQS is the most stringent of the State or Federal for that pollutant and averaging period.

Table Note 2: $PM_{2.5}$ 24-hour data are 98th percentile values, which is the basis of the AAQS and the basis for determination of the recommended background concentration.

Table Key: µg/m^3 = micrograms per cubic meter; AAQS = ambient air quality standards; CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_2 = sulfur dioxide.

Where possible, the recommended background concentration measurements come from nearby monitoring stations with similar characteristics. For the IVS project, El Centro-9th Street (O_3, PM_{10}, $PM_{2.5}$, CO, and NO_2) and Calexico-Ethel Street (SO_2) are the closest monitoring stations to the project site. The Calexico-Ethel Street monitoring station is approximately 20 mi east/southeast of the project site, just north of the US/Mexico international border. This monitoring station provides more conservative air quality data due to the influence of pollutants from Mexico.

The background concentrations for PM_{10} are at or above the most restrictive AAQS. The background concentrations for the other pollutants are all below the most restrictive AAQS.

The pollutant modeling analysis was limited to the pollutants listed in Table 3-4. Therefore, recommended background concentrations were not determined for the other criteria pollutants (O_3, lead, visibility, etc.).

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3.3 Biological Resources

This section of the Final Environmental Impact Statement (FEIS) describes the existing biological resources on and in the vicinity of the Imperial Valley Solar (IVS) project site including at the locations for the off-site ancillary facilities. This section also identifies laws, ordinances, regulations, and standards (LORS) related to biological resources that would apply to the proposed IVS project.

3.3.1 Setting and Existing Conditions

The IVS project proposes to develop a 750-megawatt (MW) solar energy facility in Imperial County, California. The IVS project would be primarily located on Federal land administered by the United States Bureau of Land Management (BLM) in the Imperial Valley, 14 miles (mi) west of El Centro. The IVS project site is in the Yuha Desert, which is a section of the Colorado Desert. The IVS project site consists of an estimated 6,140 acres (ac) of public land administered by the BLM, and approximately 360 ac of private land under the jurisdiction of Imperial County. The northern boundary of the IVS project site is adjacent to Imperial County Route S80 (Route S80) and Plaster City, and the southern boundary is adjacent to Interstate 8 (I-8).

The IVS project includes the plant site, 30,000 SunCatchers, a 230-kilovolt (kV) substation, administration buildings, support facilities, evaporation ponds, and access roads, an off-site reclaimed water supply pipeline along Evan Hewes Highway, and the linear facilities (transmission line, switchyard, and access roads) to the south of I-8.

For purposes of this analysis, the project site is categorized by three designations:

(1) **Plant Site:** The majority of the project site where SunCatchers and ancillary facilities will be located;

(2) **Transmission Line:** The portion of the transmission lines within the project site outside of the plant site to the south along the alignment of the transmission line south to the Imperial Valley Substation;

(3) **Reclaimed Water Pipeline:** The alignment of the reclaimed water pipeline to the east of the plant site from the Seeley Wastewater Treatment Plant (SWWTP) to the plant site.

3.3.2 Vegetation

The characterization of the vegetation communities on and in the immediate vicinity of the IVS project site was based on reviewing past studies, examination of pertinent scientific literature, interpretation of aerial photography of the project site and the surrounding area, and field surveys. Biologists verified the findings of the past studies and comprehensively updated the vegetation classification to reflect the current conditions on the IVS project site.

The project site, including both the on-site and off-site ancillary linear facilities, contains a variety of vegetation types. Vegetation types identified within the plant site and along linear facilities include Sonoran creosote bush scrub, desert saltbush scrub, arrowweed scrub, tamarisk scrub, agricultural areas, disturbed areas, developed areas, ornamental areas, and open channel areas as described in the following sections and as illustrated on Figure 3-2, Existing Vegetation Communities.

3.3.2.1 Sonoran Creosote Bush Scrub

The Sonoran creosote bush scrub community covers the plant site, the transmission line alignment, and approximately 3 mi of the western end of the proposed water pipeline alignment. This plant community is dominated by creosote bush (*Larrea tridentata*), bursage (*Ambrosia dumosa*), and brittlebush (*Encelia farinosa*). Other plant species observed in this plant community include ocotillo (*Fouquieria splendens*) and silver cholla (*Cylindropuntia echinocarpa*). Mesquite (*Prosopis glandulosa*) and three species of nonnative tamarisk (*Tamarix* spp.) mixed with creosote are found primarily within the ephemeral streams that transect the project area. Nonnative plants observed on site include tamarisk, Sahara mustard (*Brassica tournefortii*), red brome (*Bromus madritensis* ssp. *rubens*), and Mediterranean schismus (*Schismus barbatus*). Shrub density varied from low to moderate, in which shrub spacing ranges from several feet to tens of feet. Disturbed Sonoran creosote bush scrub in the project site appears to have been subject to ground disturbance in the past and contains many of the same species of plants at lower shrub densities.

3.3.2.2 Desert Saltbush Scrub

The desert saltbush scrub community occurs on fine-textured, poorly drained soils with high alkalinity and salinity along the proposed reclaimed water pipeline corridor. Desert saltbush (*Atriplex polycarpa*) is the dominant shrub with mesquite and bush seepweed (*Suaeda nigra*) as common species also found in this vegetation community. Shrub density varied from low to moderate. The disturbed saltbush scrub community has had some ground disturbance in the

past and contains many of the same species of plants, in addition to nonnative plants, trash, and areas of bare ground.

3.3.2.3 Arrowweed Scrub

The arrowweed scrub community is comprised almost entirely of arrowweed (*Pluchea sericea*) and occurs in small stands associated with the irrigation canals in the vicinity of the water pipeline alignment.

3.3.2.4 Tamarisk Scrub

The tamarisk scrub community is dominated by one or more species of tamarisk. Tamarisk is highly invasive and is usually associated with disturbance. Other species that occur with tamarisk include arrowweed, quailbush (*Atriplex lentiformis*), and salt grass (*Distichlis spicata*). The tamarisk scrub occurs near the canals, ditches, drainages, and along the New River in the vicinity of the water pipeline alignment.

3.3.2.5 Agricultural Areas

Agricultural areas occur in the vicinity of the water pipeline alignment. These areas are either actively being cultivated for row and farm crops or are currently fallow.

3.3.2.6 Disturbed Areas

Disturbed areas have compacted soils and are usually dominated by nonnative plants such as common sow thistle (*Sonchus oleraceus*), horehound (*Marrubium vulgare*), mustards (*Brassica* spp.), and various annual grasses (*Poaceae* family). Disturbed areas are limited to the road shoulders along the Evan Hewes Highway and on sparsely vegetated roads associated with agricultural and developed areas.

3.3.2.7 Developed Areas

Developed areas include paved off-highway vehicle (OHV) and dirt roads, the rail line, transmission lines, and buildings.

3.3.2.8 Ornamental Areas

Ornamental areas consist of landscape plantings along the water pipeline alignment that are associated with development along Evan Hewes Highway. Common cultivars include oleander (*Nerium oleander*), Canary Island date palm (*Phoenix canariensis*), small-leaved palo verde (*Cercidium microphyllum*), and various species of eucalyptus (*Eucalyptus* spp.).

3.3.2.9 Open Channel Areas

Open channel areas are characterized by constant flowing water, which includes the seven irrigation canals and New River in the vicinity of the proposed water pipeline alignment. Cattail (*Typha* sp.), annual beard grass (*Polypogon monspeliensis*), giant reed (*Arundo donax*), and nutsedge (*Cyperus squarrosus*) were present in sparse quantities along the channel banks.

3.3.3 Special-Status Communities and Habitats

No special-status natural vegetation communities occur on the IVS project site or within 1 mi of the IVS project site boundary. The natural vegetative communities that occur in the project area are not considered to be of high priority in the California Natural Diversity Database (CNDDB) and are, therefore, generally considered common enough to not be of concern.

The BLM Yuha Desert Flat-Tailed Horned Lizard (FTHL) Management Area is immediately south of I-8, on the south edge of the project area. There is United States Fish and Wildlife Service (USFWS)-designated critical habitat for Peninsular bighorn sheep (*Ovis canadensis nelsoni*) approximately 6 miles west of the project area.

3.3.4 Ephemeral Drainages, Waters of the United States, and Jurisdictional State Waters

Ephemeral streams traverse the project site and convey flows during and following a substantial rainfall. The vegetation community in the ephemeral streams is classified as Sonoran creosote bush scrub and also contains sparse stands of mesquite and tamarisk. The ephemeral streams generally contain a greater vegetative diversity and density than the creosote bush scrub habitat outside the ephemeral streams.

The ephemeral streams on the west edge of the project site drain toward Coyote Wash north of the project area. Ephemeral streams in the center of the project site drain north toward Coyote Wash, but are estimated to return flow towards the northeast part of the project area. The

ephemeral streams on the east half of the project site drain east across the project area toward the Westside Main Canal. The Westside Main Canal and Coyote Wash are tributaries to the New River and eventually drain to the Salton Sea. The Salton Sea is currently the nearest traditional navigable water (TNW) as defined by the United States Army Corps of Engineers (Corps). There is an overlap between waters of the United States and California Department of Fish and Game (CDFG) jurisdictional streambeds. For the IVS project area, the Corps jurisdictional waters of the United States cover approximately 881 ac and CDFG jurisdictional streambeds cover approximately 620 ac.

The Corps and CDFG jurisdictional areas were defined using a combination of the preliminary jurisdictional delineation report and map prepared by URS (2009); limited field verification by the Corps, CDFG, CEC, and BLM on November 10, 2009; review of high resolution aerial photography; hydrological information "Hydrologic Assessment Report Imperial Valley Solar Site" (RMA October 2009 Revision 1); and personal communication between the Corps and the Imperial Irrigation District (IID) on January 7 and August 17, 2009.

The ephemeral streams on the project site were categorized as primary or secondary (essentially equivalent to main-stem and tributary streams) based on their size, the acreage of the watershed upstream of the drainage, and whether the drainage originates on-site. This categorization was completed by the Corps for the purposes of developing and analyzing project alternatives. A total of 637 ac of primary streams and 244 ac of secondary streams were mapped. In general, primary streams are main-stem streams originating south of the project site with a minimum Strahler order of 3 or higher and tributary streams that originate on site with a Strahler order of 1 or 2 (Strahler 1957). Ten primary ephemeral streams traverse the IVS project site from south to north in the west part of the site and from south to northeast in the east half of the site. The headwaters for these streams originate from gently sloping upland areas south and west of the IVS project site in the Yuha Desert.

Culverts under I-8 convey flows from primary steams south of the freeway to flow under I-8 and into the IVS project site. Some large secondary streams that have large watersheds south of I-8 have been effectively intercepted by I-8. As a consequence, these secondary stream flows are diverted to the culverts feeding the primary streams. These ephemeral stream features on the IVS project site are shown on Map 1 in the *Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* provided in Appendix H. The *Draft 404B-1 Alternatives Analysis* was prepared by the Corps for evaluating direct, indirect, and cumulative impacts and determining the Least Environmentally Damaging Practicable Alternative (LEDPA).

Ephemeral streams in the project area provide beneficial functions and services typical of high quality, low disturbance desert scrub systems. Riverine functions are generally categorized into hydrologic, physical, and biologic. Functions preformed include, but are not limited to,

groundwater recharge, flood peak attenuation, floodwater storage, sediment trapping and transport, nutrient trapping, and maintenance of wildlife corridors and habitat. An assessment of the function-based condition of the ephemeral streams on the IVS project site was completed by the Southern California Coastal Water Research Project (SCCWRP) using the California Rapid Assessment Method (CRAM; SCCWRP May 2010). That assessment is summarized in the *Draft 404B-1 Alternatives Analysis* in Appendix H.

The reclaimed water pipeline would either span the seven irrigation canals and the New River via attachment to bridge crossings or other structures or go under those waterbodies via directional boring. The irrigation canals and the New River are considered waters of the United States and CDFG jurisdictional streams. The estimated acreage of CDFG jurisdictional streambeds associated with the water pipeline part of the project site is 0.2 ac. Seepage from some of the irrigation canals has created adjacent wetlands with large stands of tamarisk scrub and arrowweed scrub, which are subject to Corps jurisdiction. The estimated acreage of waters of the United States associated with off-site IVS project features is 2.33 ac.

3.3.5 Wildlife

A variety of wildlife occupies the habitats that occur in the project area. Reptiles detected during 2007/2008 surveys include FTHL (*Phrynosoma mcallii*), side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), Great Basin whiptail (*Cnemidophorus tigris tigris*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard (*Phrynosoma platyrhinos*), and Colorado Desert sidewinder (*Crotalus cerastes*). Mammals recorded during those surveys include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), and desert kit fox (*Vulpes macrotis arsipus*). Along the water pipeline alignment, commonly observed reptiles and mammals include the side-blotched lizard, whiptail lizard, desert cottontail, and California ground squirrel. In March 2009, several individuals of the Federally listed as endangered Peninsular bighorn sheep were observed on the project site.

The project area provides forage, cover, roosting, and nesting habitat for a variety of bird species. Common resident and migratory birds detected in and near the IVS project site in the 2007 and/or 2008 surveys include lesser nighthawk (*Chordeiles acutipennis*), mourning dove (*Zenaida macroura*), black-tailed gnatcatcher (*Polioptila melanura*), white-crowned sparrow (*Zonotrichia leucophrys*), California horned lark (*Eremophila alpestris actia*), verdin (*Auriparus flaviceps*), cliff swallow (*Hirundo pyrrhonota*), common raven (*Corvus corax*), great-tailed grackle (*Quiscalus mexicanus*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), northern mockingbird (*Mimus polyglottos*), rock dove (*Columba livia*),

western kingbird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), and white-winged dove (*Zenaida asiatica*).

Raptors detected at the IVS project site include American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*). Burrowing owls (*Athene cunicularia*) were also detected along the transmission line route with potential burrows on the project site.

Along the water pipeline alignment, commonly observed birds include the killdeer (*Charadrius vociferous*), song sparrow (*Melospiza melodia*), cliff swallow, common raven, house finch, and mourning dove. The highest densities of burrowing owls would most likely occur in the agricultural areas along the water pipeline alignment.

3.3.6 Special Status Species

Some species of plants and wildlife are accorded special status by Federal and State agencies largely because they are either scarce on a regional level, facing clearly defined threats, or in a position within the regional landscape to potentially become scarce. Special-status species are:

- Threatened, endangered, proposed, or candidates for listing under the Federal Endangered Species Act (FESA) or state equivalents; or
- BLM-designated sensitive species

Tables 3-5 and 3-6 list special-status species known to occur on and in the vicinity of the project site or that have the potential of occurring in the area based on the CNDDB. Habitat requirements for each regionally occurring special-status species were assessed and compared to the type and quality of habitats observed on the IVS project site during the biological surveys. This analysis was also based on review of pertinent literature, aerial photographs, and topographic maps. Several regionally occurring species were eliminated due to the lack of suitable habitat within the project area, elevational range, lack of suitable soils/substrates, and/or distribution.

Table 3-5 Special-Status Plant Species Known or Potentially Occurring in the Project Area

Common Name (Scientific Name)	Status State/Federal/BLM	Potential for Occurrence on the IVS Project Site
chaparral sand verbena (*Abronia villosa* var. *aurita*)	__/__/S	**Low**—Not observed during surveys along proposed water pipeline during the appropriate blooming period. Historic CNDDB occurrence in Seeley in the area of the water pipeline alignment.
Flat-seeded spurge (*Chamaesyce platysperma*)	__/__/S	**Moderate**—Surveys insufficient to determine presence or absence. Nearest CNDDB record is from the vicinity of Superstition Mountain, approximately 14 mi north of the IVS project site. Suitable habitat occurs on the IVS project site.
Wiggins' croton (*Croton wigginsii*)	R/__/S	**Present**—Observed on the IVS project site during the 2010 spring surveys.
Mountain springs bush lupine (*Lupinus excubitus* var. *medius*)	__/__/S	**Low**—Surveys insufficient to determine presence or absence. Nearest record is from Myers Valley, approximately 9 mi southwest of the IVS project site. Suitable habitat does not occur on the IVS project site.
Orcutt's woody-aster (*Xylorhiza orcuttii*)	__/__/S	**Moderate**—Surveys insufficient to determine presence or absence. Nearest CNDDB record is from Basin Wash into Tule Wash in the Anza-Borrego Desert State Park, approximately 12.5 mi northwest of the IVS project site. Suitable habitat occurs on the IVS project site.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: BLM = United States Bureau of Land Management; CDFG = California Department of Fish and Game; CNDDB = California Natural Diversity Database; IVS = Imperial Valley Solar; mi = miles.

Table Key: **Status – State**

R = Rare.

Table Key: **Status – BLM**

S = Sensitive.

Table Key: **Potential to Occur**

Present – The species was observed on site during botanical surveys.

Moderate – Low quality suitable habitat is present on or near the IVS project site. Species was not identified during reconnaissance surveys of the IVS project site. Species may occur on the site.

Low – Suitable habitat is not present on the site. Species not expected to occur on the site.

Table 3-6 Special-Status Wildlife Species Known or Potentially Occurring in the Project Area

Common Name (Scientific Name)	Status State/Federal/BLM	Potential for Occurrence on the IVS Project Site
Reptiles		
Barefoot banded gecko (*Coleonyx switaki*)	ST/__/__	**Low**—Not observed. Nearest CNDDB occurrence approximately 6 mi northwest of the IVS project site. Lack of rocky habitat makes the IVS project site unsuitable for this species.
Flat-tailed horned lizard (*Phrynosoma mcallii*)	CSC/__/S	**Present**— Three FTHL were observed on the northeastern boundary of the plant site, and two FTHL (dead roadkills) were observed along the transmission line alignment. No FTHL were observed along the water pipeline alignment.
Birds		
Golden eagle (*Aquila chrysaetos*)	SFP/__/__	**Moderate**—Not observed though within winter range of this species. Rarely seen in Imperial County. Only five known occurrences documented in Imperial County. Nearest occurrence approximately 2 mi northeast of Seeley. Suitable nesting habitat does not occur on the IVS project site; however, suitable foraging habitat does occur on the IVS project site.
Burrowing owl (*Athene cunicularia*)	CSC/BCC/S	**Present**—Observed on the IVS project site during surveys.
California horned lark (*Eremophila alpestris*)	CSC/__/__	**Present**—Observed on the IVS project site during surveys.
Bald eagle (*Haliaeetus leucocephalus*)	SE/FT-D/__	**Low**—Not observed though within winter range of this species. Nearest occurrence is from the south shore of the Salton Sea, approximately 18 mi northeast of the IVS project site. Suitable foraging and nesting habitat does not occur on the IVS project site.
Loggerhead shrike (*Lanius ludovicianus*)	CSC/BCC/__	**Present**—Observed on the IVS project site during surveys.
Vermillion flycatcher (breeding) (*Pyrocephalus rubinus*)	CSC/__/__	**Moderate**—Not observed. Nearest CNDDB occurrence 2 mi south of the water pipeline alignment. Suitable habitat occurs in the riparian areas associated with the irrigation canals and New River.

Common Name (Scientific Name)	Status State/Federal/BLM	Potential for Occurrence on the IVS Project Site
Yuma clapper rail (*Rallus longirostris yumamensis*)	SE, SFP/FE/__	**Low**—Not observed during 2010 field surveys. Nearest CNDDB record for this species is from 2005 from the southern end of the Salton Sea at the mouth of New River, approximately 25 mi northwest of the project site. Suitable large areas of open water, marsh habitat, and adjacent upland areas do not occur on the IVS project site for this species.
Le Conte's thrasher (*Toxostoma lecontei*)	WL/BCC/S	**Present**—Observed on the IVS project site during surveys. Several CNDDB records within the vicinity of the IVS project site.
Mammals		
Pallid bat (*Antrozous pallidus*)	CSC/__/S	**Moderate**—No roost sites observed during field survey although focused surveys for bat roosts were not conducted. Nearest CNDDB record is 20 mi northwest of the project site at Fish Creek Wash at the south end of Split Mountain in Anza-Borrego Desert State Park in 1996. Suitable foraging habitat occurs in the project area, and suitable roosting habitat occurs along Evan Hewes Highway and the water pipeline alignment.
Western yellow bat (*Lasiurus xanthinus*)	CSC/__/__	**High**—No roost sites observed during field surveys although focused surveys for bat roosts were not conducted. Nearest CNDDB occurrence is 11 mi east of the project site in El Centro during 1989–1990. Suitable roosting and foraging habitat occurs along the water pipeline alignment.
Big free-tailed bat (*Nyctinomops macrotis*)	CSC/__/__	**Low**—No roost sites observed during field surveys although focused surveys for bat roosts were not conducted. Nearest CNDDB occurrence is near El Centro during 1987, approximately 12 mi east of the project site. Though the project site may be suitable foraging habitat, roosting habitat does not occur on the project site.
Peninsular bighorn sheep (*Ovis canadensis nelsoni*)	ST/FE/S	**Moderate/Present**—During the March 2009 biological surveys, a small herd of 5 ewes and/or juveniles was observed on the IVS project site. This was considered an unusual occurrence because the habitat on IVS project site is not optimal for the sheep due to lack of cover, escape routes, human recreational OHV use, and distance from typical habitat. However, the IVS project site does provide marginal foraging habitat.

Common Name (Scientific Name)	Status State/Federal/BLM	Potential for Occurrence on the IVS Project Site
American badger (*Taxidea taxus*)	CSC/__/__	**High**—Not observed though potential burrows observed on project site during surveys. Nearest occurrence south across I-8 from the project site.

Table Source: Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; 2010) and 2010 Spring Surveys.

Table Key: BLM = United States Bureau of Land Management; CDFG = California Department of Fish and Game; CNDDB = California Natural Diversity Database; CNPS = California Native Plant Society; FTHL = flat-tailed horned lizard; I-8 = Interstate 8; IVS = Imperial Valley Solar; mi = miles; OHV = off-highway vehicle.

Table Key: **Status – State**

CSC = California Species of Special Concern. Species of concern to the CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

SE = State listed as endangered.

ST = State listed as threatened.

SFP = State fully protected.

WL = Watch List. Includes species formerly on California Species of Special Concern List (Remsen 1978) but which did not meet the criteria for the current list of special concern bird species (Shuford and Gardali 2008).

Table Key: **Status – Federal**

FE = Federally listed, endangered. Species in danger of extinction throughout a significant portion of its range.

FT = Federally listed, threatened. Species likely to become endangered within the foreseeable future.

BCC = Fish and Wildlife Service, Birds of Conservation Concern. Identifies migratory and nonmigratory bird species (beyond those already designated as Federally threatened or endangered) that represent highest conservation priorities (http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf).

D = Delisted taxon that is considered recovered.

Table Key: **Status – BLM**

S = Sensitive.

Table Key: **Potential to Occur**

Present – The species was observed on site during botanical surveys.

High – Suitable habitat is present within the proposed site. Occurrence records exist for species in proximity to the site. Species expected to occur on site.

Moderate – Low quality suitable habitat is present within or near the proposed site. Species was not identified during reconnaissance surveys of the site. Species may occur on site.

Low – Suitable habitat is not present on site. Species not expected to occur on site.

3.3.6.1 Special-Status Plants

The project area is known to support a variety of special-status plant species. Of the special-status species listed in Table 3-5, none are Federally or State listed, and five are BLM sensitive species. Due to suitable habitat being present, most of the special-status plant species listed in Table 3-5 have a moderate potential of occurring on the IVS project site, though they were not detected during surveys. The low potential for occurrence for other species, with the exception of chaparral sand verbena, is mainly due to the IVS project site being located below the typical elevation range for the particular species. The applicant will conduct additional plant surveys in the late summer/early fall 2010 after seasonal monsoonal storm events. The late summer/early fall storms typically result in blooming of plant species that may not occur during spring. The one sensitive plant species that has a high potential for occurrence on the IVS project is the Wiggins' croton, which is described below.

Wiggins' Croton (*Croton wigginsii*) – State (R), BLM(S)

This plant is a woody, much branched, silvery looking shrub that grows to a height of 1.6–2.6 ft. Leaves are narrow and have star-shaped hairs. The plant lacks petals, but has five sepals. This plant is typically found in sand dunes and blooms March through May.

3.3.6.2 Special-Status Wildlife

Table 3-6 lists special-status wildlife species that are known to occur on and in the immediate vicinity of the IVS project site according to the CNDDB or have the potential of occurring. Species that were detected on the IVS project site, the detection of wildlife signs (i.e., scats, burrows, or tracks), or those species with a high potential for occurrence are discussed in more detail below.

Flat-Tailed Horned Lizard (*Phrynosoma mcallii*) –State (ST), Federal (proposed), BLM (S)

The range for FTHL includes southeastern California, southwestern Arizona, and adjacent parts of Baja California and Sonora, Mexico, in the Lower Colorado River Valley Subdivision of the Sonoran Desert. Typical habitat for the FTHL is sandy desert hardpan or gravel flats with fine, windblown sand and sparse vegetation with low species diversity.

A habitat assessment was conducted in March 2007 to determine the suitability of the IVS project site for FTHL. Due to the occurrence of harvester ants (*Pogonomyrmex* spp.), which are a primary food source for FTHL throughout the project area, and suitable soil and vegetation to

support FTHL, it was determined that surveys in accordance with the FTHL Rangewide Management Strategy (FTHL Interagency Coordinating Committee [ICC] 2003) would be necessary. From May 1, 2007, to May 7, 2008, modified project evaluation protocol surveys were conducted for FTHL. A total of eight FTHLs were observed during the biological surveys in 2007. Five of the eight FTHLs were observed on the IVS project site and one was observed just outside the eastern boundary of the IVS project site. Two dead FTHLs were observed along the alignment of the off-site transmission line. During the surveys in 2008, two FTHLs were detected in the project area, and the 2009/2010 surveys for FTHL on the IVS project site were negative.

The approximately 6,000 ac plant site and the 92.8 ac transmission line provide suitable habitat and food source to support FTHLs. Furthermore, FTHLs were observed on the IVS project site during surveys. Therefore, FTHLs are known to be present throughout the IVS project site. Based on data collected by the BLM in the adjacent Yuha Management Area and extrapolated to this site, there could be potentially 2,000 or more FTHLs in the project area.

Western Burrowing Owl (*Athene cunicularia hypugaea*) – State (CSC), FED (BCC), BLM (S)

Western burrowing owls inhabit arid lands throughout much of the western United States and southern interior of western Canada. In many other areas, this species has declined because of habitat modification, poisoning of its prey, and introduced nest predators. However, the Imperial Valley has been a population stronghold for burrowing owls. It is estimated that 71 percent of the State's burrowing owl pairs occur in the Imperial Valley. The burrowing owl is diurnal and usually nonmigratory in this part of its range.

Burrowing owls are unique among North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years. The southern California breeding season (defined as from pair bonding to fledging) generally occurs from February to August, with peak breeding activity from April through July.

Habitat on the IVS project site is suitable for burrowing owls. In the Imperial Valley, burrowing owls generally occur in high densities near agricultural lands where rodent and insect prey tend to be more abundant. Nine burrows with burrowing owl sign were identified within the survey area. One burrowing owl was observed on the IVS project site along the transmission line corridor, and two were observed east of the IVS project site boundaries. Surveys conducted in 2009 along the water pipeline alignment did not detect burrowing owls or potential burrows.

There is a potential for presence of burrowing owls because the pipeline would cross suitable habitat such as agricultural fields and canal banks with ground squirrel burrows.

Le Conte's Thrasher (*Toxostoma lecontei*) – State (WL), Federal (BCC), BLM (S)

This species inhabits some of the hottest and driest habitats in the arid southwest, including the deserts of southeastern California, where they occur year-round. Preferred habitats include sparse desert scrub, alkali desert scrub, and desert succulent scrub habitats with ephemeral streams. They seek gentle to rolling slopes associated with ephemeral streams, conditions that are found on alluvial fans in the project area. Nests are typically placed in prickly vegetation such as cacti or thorny shrubs. This species requires areas with an accumulated leaf litter under most plants as cover for its preferred arthropod prey; they also feed on seeds, insects, small lizards, and other small vertebrates. The Le Conte's thrasher population densities are among the lowest of perching birds, estimated at less than five birds per square kilometer in optimal habitats. This low population density decreases the probability of their detection during field surveys. The population is declining due in part to the conversion of habitat to agriculture and urbanization. Le Conte's thrasher is one of the focal bird species identified in *The Desert Bird Conservation Plan* that is vulnerable to habitat loss and fragmentation. Le Conte's thrashers are also affected by off-highway use during nesting season, which occurs on designated unimproved roads throughout the project area.

One Le Conte's thrasher was observed just west of the IVS project site boundary within the 1 mi buffer survey area during the 2007 surveys. There is some confusion as to the resident status of this species in the Imperial Valley. Kimball Garrett of the Los Angeles County Museum of Natural History Section of Ornithology considers Le Conte's thrashers to be a resident species, and the reason for the low species count is possibly due to the lack of birding done in these areas. There is a high potential for Le Conte's thrashers to use the project area for foraging and cover.

Peninsular Bighorn Sheep (*Ovis canadensis nelsoni*) – State (ST), Federal (FE), BLM (S)

The Peninsular bighorn sheep are a Distinct Population Segment (DPS) of desert bighorn sheep (63 Federal Register 13134) that occupy the Peninsular Ranges of southern California, ranging from the San Jacinto Mountains in California south to the Volcan Tres Virgenes Mountains in Baja California, Mexico. Bighorn sheep are typically found on open, rocky, steep areas (which are used for escape cover and shelter) with available water and herbaceous vegetation for forage. Most desert bighorn sheep live between 300 to 4,000 ft in elevation, where the annual precipitation is less than 4 inches and daily high temperatures average 104 degrees Fahrenheit

(°F) in the summer. Desert bighorn sheep congregate near dependable water sources from May through October. These population aggregations during this period are due to a combination of breeding activities and diminishing water sources. It is common for males and females to segregate and occupy different habitats outside the breeding season.

CNDDB records indicate this species was documented approximately 9 mi southwest of the IVS project site in the vicinity of the Pinto/In-Ko-Pah Drainage in 1986, when approximately 20 sheep were recorded. In 1986, approximately 85 desert bighorn sheep were documented 14 mi west of the project area in the In-Ko-Pah Mountains.

The presence of Peninsular bighorn sheep on the IVS project site was documented in 2009. A group of five ewes and/or juveniles was sighted in spring of 2009 in an ephemeral stream approximately 1 mi southwest of Plaster City. Peninsular bighorn sheep do use lowland habitat periodically for foraging and dispersal. Movement by bighorn sheep this distance from known habitat (approximately 6 mi west of the project area) has not been previously or subsequently documented by experts or otherwise recorded in databases. It has been speculated by BLM staff and consultants for the applicant that the bighorn sheep sited on the IVS project site could have been flushed by OHV activity and possibly became disoriented and wandered onto the IVS project site. This is the farthest east that a sighting of Peninsular bighorn sheep has been documented.

Pallid Bat (*Antrozous pallidus*) – State (CSC), BLM (S)

In general, pallid bats prefer rocky areas, typically in outcrops. This species likes to roost in rocky crevices and prefer caves and tunnels, such as those located in mines. However, pallid bats are known to select domestic areas for habitat. For example, they are known to select roosting sites in attics, house eaves, barn eaves, behind signs, and inside hollow trees. In Texas and New Mexico, pallid bats are frequently found in adobe houses, usually those that have been abandoned. The IVS project site does not provide substantial habitat for the pallid bat.

Golden Eagle (*Aquila chrysaetos*) – State (SFP)

The IVS project site does not provide nesting habitat for the golden eagle but it does contain marginal to suitable foraging habitat for this golden eagle. The IVS project site does not include any golden eagle nesting habitat, nests, breeding territory, or communal roosts. It is not known if the IVS project site functions as a golden eagle migratory corridor.

Bald Eagle (*Haliaeetus leucocephalus*) – State (SE), Federal (FT-D)

The IVS project site does not provide nesting or forage habitat for the bald eagle. Bald eagles typically live along the coast or rivers and streams and feed primarily on fish. The IVS project site does not include any bald eagle nesting habitat, nests, forage habitat, or roosts.

3.3.6.3 Species of Special Concern

The California Species of Special Concern (CSC) status applies to animals not listed under the Federal Endangered Species Act or the California Endangered Species Act, but which nonetheless are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. CSC species share one or more of the following criteria:

- Occur in small, isolated populations or in fragmented habitat, and are threatened by further isolation and population reduction;
- Show marked population declines. Population estimates are unavailable for the vast majority of taxa. Species that show a marked population decline, yet are still abundant, do not meet the Special Concern definition, whereas marked population decline in uncommon or rare species is an inclusion criterion;
- Depend on a habitat that has shown substantial historical or recent declines in size. This criterion infers the population viability of a species based on trends in the habitats on which it specializes. Coastal wetlands, alluvial fan sage scrub, coastal sage scrub, and arid scrub are examples of California habitats that have seen dramatic reductions in size in recent history. Species that specialize in these habitats generally meet the criteria for threatened, endangered , or Special Concern status;
- Occur only in or adjacent to an area where habitat is being converted to land uses incompatible with the animal's survival;
- Have few California records, or which historically occurred here but for which there are no recent records; and
- Occur largely on public lands, but where current management practices are inconsistent with the animal's persistence.

This designation is intended to result in special consideration for these animals by the land agencies, land managers, consulting biologists, and others, and is intended to focus attention

on the species to help avert the need for costly listing under Federal and State endangered species laws and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. The following CSC wildlife species were identified as being present on or potentially occurring on the IVS project site.

California Horned Lark (*Eremophila alpestris actia*) – State (CSC)

Horned larks prefer areas with sparse vegetation and exposed soil. In western North America, this species is associated with desert brushlands, grasslands, and similar open habitats, as well as alpine meadows. Throughout their range, horned larks avoid all habitats dominated by dense vegetation and become scarce and locally distributed in heavily forested areas. Horned larks are also commonly found in agricultural areas where they breed in fallow fields. Their nests are destroyed by planting and other agricultural activities, which has contributed to an 84 percent decline in horned lark populations since 1967. As a result, Audubon California considers this species one of California's most vulnerable common birds. Multiple individuals of this species were observed frequently throughout the survey area during the 2007 and 2008 surveys.

Loggerhead Shrike (*Lanius ludovicianus*) – State (CSC), Federal (BCC)

Loggerhead shrikes can be found in lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, nonnative grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. In general, loggerhead shrikes prey on large insects, small birds, amphibians, reptiles, and small rodents over open ground in areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding. Loggerhead shrikes are fairly common breeding residents in the Imperial Valley and are typically associated with desert scrub. Agricultural areas, which are common in the Imperial Valley, are used during the nonbreeding season. Surveys conducted since 1966 have shown a decreasing trend in the population of loggerhead shrikes in the Mojave and Sonoran Deserts. Suitable habitat for loggerhead shrike occurs throughout the scrub habitats within the project site**,** and loggerhead shrikes were observed during the 2007 and 2008 surveys.

Western Yellow Bat (*Lasiurus xanthinus*) – State (CSC)

In California, western yellow bats have been reported below 2,000 ft elevation in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. The species shows a particular

association with palm oases and is believed to be expanding its range and abundance with the increased usage of ornamental palms in landscaping. Western yellow bats in California can either occur year-round or individuals or populations can be migratory. This species feeds on flying insects, forages over water and among trees, and commonly roosts in the skirt of dead fronds of palm trees.

No western yellow bats were observed during the surveys, but no surveys were specifically conducted for this species or any other bats. A western yellow bat specimen was collected approximately 11 mi east of the project site in 1977. Other specimens were collected in El Centro from 1980 to 1999. Due to the lack of palms on the majority of the project site, it is considered unlikely that western yellow bat occurs; however, the ornamental palms planted along the water pipeline alignment could be potential roosting sites for the bats. Given that western yellow bats are in the project area, there is high potential for this species to occur along the water pipeline alignment part of the project site.

American Badger (*Taxidea taxus*) – State (CSC)

Known to occur in the Colorado Desert, the American badger is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush scrub and sagebrush. Badgers are fossorial, digging large burrows in dry, friable soils and would use multiple dens/cover burrows within its home range. It typically uses a different den every day, although it can use a den for a few days at a time.

No American badgers were detected during project surveys in 2007 or 2008, although several potential burrows were observed on the IVS project site. The CNDDB indicates occurrences in the adjacent *Coyote Wells and Seeley* United States Geological Survey (USGS) quadrangle with the closest occurrence immediately south of I-8 from the IVS project site. The IVS project site provides high habitat potential for this species.

Desert Kit Fox (*Vulpes macrotis*)

Because the desert kit fox is not a special-status species, it is not listed in Table 3-6. However, it is protected under Title 14, California Code of Regulations Section 460, which states that "Fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time." These fur-bearing mammals are State Protected. Therefore, potential impacts to individuals of this species must be avoided. Desert kit fox sign were detected on the IVS project site, and the IVS project site includes marginally suitable foraging and denning habitat for this species.

3.3.7 Biological Resources Laws, Ordinances, Regulations, and Standards

Table 3-7 provides a general description of the biological resources laws, ordinances, regulations, and standards (LORS) applicable to the IVS project.

Table 3-7 Biological Resources Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Federal Endangered Species Act (Title 16, USC Section 1531 et seq., and Title 50 CFR Part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat.
Migratory Bird Treaty Act (Title 16 USC Sections 703–711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the Migratory Bird Treaty Act.
Clean Water Act (Title 33 USC Sections 1251–1376, and CFR Part 30, Section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the Corps for a discharge from dredged or fill materials into waters of the United States, including wetlands. Section 401 requires a permit from an RWQCB for the discharge of pollutants. By Federal law, every applicant for a Federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request State certification that the proposed activity would not violate State and Federal water quality standards.
Corps Section 404(b)(1) Guidelines (40 CFR 230 et seq.)	Requires the Corps to analyze alternatives in a sequential approach such that the Corps must first consider avoidance and minimization of impacts to the extent practicable to determine whether a proposed discharge can be authorized.
NEPA, Title 42 USC Section 4321 et seq.	NEPA requires an evaluation of environmental impacts of projects proposed on Federal lands or receiving Federal funding.
CDCA Plan (BLM, 1980, as amended)	The CDCA is one of two national conservation areas established by Congress at the time of the passage of the FLPMA. The FLPMA outlines how the BLM would manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.
FTHL Rangewide Management Strategy (2003 Revision)	Provides guidance for the conservation and management of sufficient habitat to maintain viable populations of FTHL in each of the five Management Areas in perpetuity.
Federal Noxious Weed Act of 1974 (Public Law 93-629) (7 USC 2801 et seq.; 88 Statutes 2148)	Establishes a Federal program to control the spread of noxious weeds. Authority is given to the Secretary of Agriculture to designate plants as noxious weeds by regulation, and the movement of all such weeds in interstate or foreign commerce was prohibited except under permit.

Applicable Law	Description
Executive Order 13112 (February 3, 1999) Invasive Species (FR doc 99-3184; FR Volume 64, No. 25, Presidential documents 6183–6186)	Federal agencies are mandated to take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause.
The Bald and Golden Eagle Protection Act (16 USC Sections 668–668d and Title 50 CFR Section 22.26)	Prohibits the take of bald and golden eagles unless take is determined to be compatible with the preservation of the eagle, is necessary for the protection of wildlife or of agricultural or other interests in any particular locality, and where the taking is associated with but not the purpose of the activity and cannot practicably be avoided.
Permit for take under the Bald and Golden Eagle Protection Act (Title 50 CFR Section 22.27)	Authorizes intentional take of eagle nests where: necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure; the activity, or mitigation for the activity, will provide a net benefit to eagles; and allows inactive nests to be taken only in the case of safety emergencies.
State	
California Endangered Species Act of 1984 (Fish and Game Code, Sections 2050–2098)	Protects California's rare, threatened, and endangered species.
CCR Title 14, Section 460	Lists State-protected fur-bearing mammals.
CCR Title 14, Sections 670.2 and 670.5	Lists the plants and animals of California that are declared rare, threatened, or endangered.
Nest or Eggs (Fish and Game Code Section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Birds of Prey (Fish and Game Code Section 3503.5	Unlawful to take, possess, or destroy any birds in the orders Falconiformes and Strigiformes or to take, possess, or destroy the nest or eggs of any such bird.
Migratory Birds (Fish and Game Code Section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.
Fur-bearing Mammals (Fish and Game Code Sections 4000 and 4002)	Lists fur-bearing mammals that require a permit for take.
Lake and Streambed Alteration Agreement (Fish and Game Code Sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.

Applicable Law	Description
California Desert Native Plants Act of 1981 (Food and Agricultural Code Section 80001 et seq. and California Fish and Game Code Sections 1925–1926)	Protects nonlisted California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.
California Food and Agriculture Code, Section 403	The California Department of Food and Agriculture is designated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds.
Noxious Weeds (Title 3 CCR Section 4500)	List of plant species that are considered noxious weeds.
Local	
Imperial County General Plan (Imperial County 1993)	The Conservation and Open Space and Land Use Elements of the General Plan direct the County to evaluate the compatibility of proposed development projects with the preservation of biological resources and open space.
Imperial County Land Use Ordinance (Title 9, Division 10)	Provides grading regulations for proposed development projects throughout the unincorporated areas of the County.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC, BLM, 2010).

Table Key: BLM = United States Bureau of Land Management; CCR = California Code of Regulations; CDCA = California Desert Conservation Area; CDFG = California Department of Fish and Game; CEC = California Energy Commission; CFR = Code of Federal Regulations; Corps = United States Army Corps of Engineers; FLPMA = Federal Land and Policy Management Act; FR = Federal Register; FTHL = flat-tailed horned lizard; NEPA = National Environmental Policy Act; RWQCB = Regional Water Quality Control Board; USC = United States Code.

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3.4 Climate Change

3.4.1 Existing Conditions

On April 2, 2007, the United States Supreme Court found that greenhouse gases (GHGs) are pollutants that must be covered by the Federal Clean Air Act (CAA). In response, on September 30, 2009, the United States Environmental Protection Agency (EPA) proposed to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose carbon dioxide (CO2)-equivalent emissions exceed 25,000 tons per year. The Council on Environmental Quality (CEQ) published draft guidance on February 18, 2010 for Federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for Federal actions under the National Environmental Policy Act (NEPA).

3.4.2 Applicable Regulations, Plans, and Policies

In 2002, with the passage of Assembly Bill (AB) 1493, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the State level. AB 1493 requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 vehicle model year. California is expected to enforce its standards from 2009 through 2011 and then look to the Federal government to implement equivalent standards from 2012 through 2016. The State is expected to start developing new standards for the post-2016 model years later this year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05. The goal of this EO is to reduce California's GHG emissions to: (1) 2000 levels by 2010, (2) 1990 levels by the 2020, and (3) 80 percent below 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "…real, quantifiable, cost-effective reductions of greenhouse gases." EO S-20-06 further directs State agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With EO S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG reduction are also concerns at the Federal level; however, at this time, no Federal legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the EPA to regulate GHG as a pollutant under the Federal CAA (Massachusetts v. Environmental Protection Agency et al., 549 U.S. 497 [2007]). The court ruled that GHG does fit within the CAA definition of a pollutant, and that the EPA does have the authority to regulate GHG. Despite the Supreme Court ruling, there are no promulgated Federal regulations to date limiting GHG emissions.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHG under Section 202(a) of the Federal CAA:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHG (CO_2, CH_4, N_2O, hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed GHG from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by EPA and the United States Department of Transportation National Highway Safety Administration on September 15, 2009.[1]

The CEQ draft guidance (February 18, 2010) proposes that if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO_2-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons of CO_2-equivalent, CEQ encourages Federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions

[1] http://www.epa.gov/climatechange/endangerment.html.

that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs.

3.4.3 Greenhouse Gases and Electricity Generation

The generation of electricity can produce GHG with the criteria air pollutants that have been traditionally regulated under the Federal and state CAAs. For fossil fuel-fired power plants, the GHG emissions include primarily CO_2, with much smaller amounts of N_2O and CH_4 (often from incomplete combustion of natural gas). For solar energy generation projects, the stationary source GHG emissions are much smaller than fossil fuel-fired power plants, but the associated maintenance vehicle emissions are the same. Other sources of GHG emissions include SF_6 from high voltage equipment and HFCs and PFCs from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented in this EIS as some of the compounds have very high global warming potentials.

As California moves towards an increased reliance on renewable energy by implementing the Renewables Portfolio Standard (RPS), non-renewable energy resources may be curtailed or displaced as shown in Table 3-8. These potential reductions in non-renewable energy, shown in Table 3-9, could be as much as 36,000 GWh. These assumptions are conservative in that the forecasted growth in electricity retail sales assumes that the impacts of planned increases in expenditures on (uncommitted) energy efficiency are already embodied in the current retail sales forecast.[1] If, for example, forecasted retail sales in 2020 were lowered by 10,000 GWh due to the success of increased energy efficiency expenditures, non-renewable energy needs fall by an additional 8,000 to 6,700 GWh/year, depending on the RPS level, totaling as much as 45,000 GWh per year of reduced non-renewable energy, depending on the RPS assumed as shown in Table 3-9.

[1] Energy efficiency savings are already represented in the current Energy Commission demand forecast adopted December 1009 (CEC 2009c).

Table 3-8 Estimated Changes in Nonrenewable Energy Potentially Needed to Meet California Loads, 2008–2020

California Electricity Supply	Annual GWh
Statewide Retail Sales, 2008, estimated (Table Note 1)	265,185
Statewide Retail Sales, 2020, forecast (Table Note 1)	308,070
Growth in Retail Sales, 2008–2020	42,885
Growth in Net Energy for Load (Table Note 2)	46,316

Table Source: Energy Commission staff (2009).

Table Note 1: Not including 8% transmission and distribution losses.

Table Note 2: Based on 8% transmission and distribution losses, or 42,885 GWh x 1.08 = 46,316 GWh.

Table Key: GWh = gigawatt hours

Table 3-9 Changes in Nonrenewable Energy, 2008–2020

California Renewable Electricity	GWh @ 20% RPS	GWh @ 33% RPS
Renewable Energy Requirements, 2020 (Table Note 1)	61,614	101,663
Current Renewable Energy, 2008	29,174	29,174
Change in Renewable Energy, 2008–2020 (Table Note 1)	32,440	72,489
Resulting Change in Nonrenewable Energy (Table Note 2)	13,876	(-36,173)

Table Source: Energy Commission staff (2009).

Table Note 1: Renewable standards are calculated on retail sales and not on total generation, which accounts for 8% transmission and distribution losses.

Table Note 2: Based on net energy (including 8% transmission and distribution losses), not on retail sales

Table Key: GWh = gigawatt hours; RPS = Renewables Portfolio Standard

3.4.3.1 The Role of Solar Projects in Retirements/Replacements

Solar power production projects are capable of providing renewable generation energy to replace resources that are or will likely be precluded from serving California loads. State policies, including GHG goals, are discouraging or prohibiting new contracts and new investments in high GHG-emitting facilities such as coal-fired generation, generation that relies on water for once-through cooling, and aging power plants. Some of the existing plants that are likely to require substantial capital investments to continue operation in light of these policies may be unlikely to undertake the investments and will retire or be replaced.

3.4.3.2 Replacement of High Greenhouse Gas-Emitting Generation

High GHG-emitting resources, such as coal, are effectively prohibited from entering into new long-term contracts for California electricity deliveries as a result of the Emissions Performance Standard adopted in 2007 pursuant to SB 1368. Between now and 2020, more than 18,000 GWh of energy procured by California utilities under these contracts will have to reduce GHG emissions or be replaced; these contracts are presented in Table 3-10.

Table 3-10 Expiring Long-term Contracts with Coal-fired Generation, 2009–2020

Utility	Facility	Contract Expiration	Annual GWh Delivered to California
PG&E, SCE	Misc In-state Qualifying Facilities (Table Note 1)	2009-2019	4,086
LADWP	Intermountain	2009-2013	3,163 (Table Note 2)
City of Riverside	Bonanza, Hunter	2010	385
Department of Water Resources	Reid Gardner	2013 (Table Note 3)	1,211
SDG&E	Boardman	2013	555
SCE	Four Corners	2016	4,920
Turlock Irrigation District	Boardman	2018	370
LADWP	Navajo	2019	3,832
TOTAL			**18,522**

Table Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

Table Note 1: All facilities are located out-of-state except for the Miscellaneous In-state Qualifying Facilities.

Table Note 2: Estimated annual reduction in energy provided to LADWP by Utah utilities from their entitlement by 2013.

Table Note 3: Contract not subject to Emission Performance Standard, but the Department of Water Resources has stated its intention not to renew or extend.

Table Key: GWh = gigawatt hours; LADWP = Los Angeles Department of Water and Power; PG&E = Pacific Gas and Electric; SCE = Southern California Edison; SDG&E = San Diego Gas and Electric.

This represents almost half of the energy associated with California utility contracts with coal-fired resources that will expire by 2030. If the State enacts a carbon adder,[1] all the coal contracts (including those in Table 3-10, which expire by 2020 and other contracts that expire beyond 2020 and are not shown in the table) may be retired at an accelerated rate as coal-fired

[1] A carbon adder or carbon tax is a specific value added to the cost of a project for per ton of associated carbon or carbon dioxide emissions. Because it is based on, but not limited to, actual operations and emission and can be trued up at year end, it is considered a simple mechanism to assign environmental costs to a project.

energy becomes uncompetitive due to the carbon adder or the capital needed to capture and sequester the carbon emissions. Also shown are the approximate 500 MW of in-state coal and petroleum coke-fired capacity that may be unlikely to contract with California utilities for baseload energy due to the SB1368 Emission Performance Standard. As these contracts expire, new and existing generation resources will replace the lost energy and capacity. Some will come from renewable generation such as this proposed project; some will come from new and existing natural gas fired generation. All of these new facilities will have substantially lower GHG emissions rates than coal and petroleum coke-fired facilities, which typically averages about 1.0 $MTCO_2$/MWh without carbon capture and sequestration. Thus, new renewable facilities will result in a net reduction in GHG emissions from the California electricity sector.

3.4.3.3 Retirement of Generation Using Once-through Cooling

The State Water Resource Control Board (SWRCB) has proposed major changes to once-through cooling (OTC) units, shown in Table 3-11, which would likely require extensive capital investment to retrofit, or retirement, or substantial curtailment of dozens of generating units. In 2008, these units collectively produced almost 58,000 GWh. While the more recently built OTC facilities may well install dry or wet cooling towers and continue to operate, the aging OTC plants are not likely to be retrofit to use dry or wet cooling towers without the power generation also being retrofit or replaced to use a more efficient and lower GHG emitting combined cycle gas turbine technology. Most of these existing OTC units operate at low capacity factors, suggesting a limited ability to compete in the current electricity market. Although the timing would be uncertain, new resources would out-compete aging plants and would displace the energy provided by OTC facilities and likely accelerate their retirements.

Any additional costs associated with complying with the SWRCB regulation would be amortized over a limited revenue stream today and into the foreseeable future. Their energy and much of their dispatchable, load-following capability will have to be replaced. These units constitute over 15,000 MW of merchant capacity and 17,800 GWh of merchant energy. Of this, much but not all of the capacity and energy are in local reliability areas, requiring a large share of replacement capacity—absent transmission upgrades—to locations in the same local reliability area. Table 3-11 provides a summary of the utility and merchant energy supplies affected by the OTC regulations.

New renewable generation resources will emit substantially less GHG emissions on average than other energy generation sources. Existing aging and OTC natural gas facility generation typically averages 0.6 to 0.7 $MTCO_2$/MWh, which is much less efficient and higher GHG emitting, than a renewable energy project.

Table 3-11 Aging and Once-Through Cooling Units: 2008 Capacity and Energy Output

Plant, Unit Name	Local Reliability Area	Aging Plant?	Capacity (MW)	2008 Energy Output (GWh)	GHG Emission Rate ($MTCO_2$/MWh)
Utility-Owned Units					
Diablo Canyon 1, 2	None	No	2,232	17,091	Nuclear
San Onofre 2, 3	LA Basin	No	2,246	15,392	Nuclear
Broadway 3 (Table Note 1)	LA Basin	Yes	75	90	0.648
El Centro 3, 4 (Table Note 1)	None	Yes	132	238	0.814
Grayson 3-5 (Table Note 1)	LADWP	Yes	108	150	0.799
Grayson CC (Table Note 1)	LADWP	Yes	130	27	0.896
Harbor CC	LADWP	No	227	203	0.509
Haynes 1, 2, 5, 6	LADWP	Yes	1,046	1,529	0.578
Haynes CC	LADWP	No	560	3,423	0.376
Humboldt Bay 1, 2 (Table Note 2)	Humboldt	Yes	107	507	0.683
Olive 1, 2 (Table Note 1)	LADWP	Yes	110	11	1.008
Scattergood 1-3	LADWP	Yes	803	1,327	0.618
Utility-Owned Total			**7,776**	**39,988**	**0.693**
Merchant-Owned Units					
Alamitos 1-6	LA Basin	Yes	1,970	2,533	0.661
Contra Costa 6, 7	SF Bay	Yes	680	160	0.615
Coolwater 1-4 (Table Note 1)	None	Yes	727	576	0.633
El Segundo 3, 4	LA Basin	Yes	670	508	0.576
Encina 1-5	San Diego	Yes	951	997	0.674
Etiwanda 3, 4 (Table Note 1)	LA Basin	Yes	666	848	0.631
Huntington Beach 1, 2	LA Basin	Yes	430	916	0.591
Huntington Beach 3, 4	LA Basin	No	450	620	0.563
Mandalay 1, 2	Ventura	Yes	436	597	0.528
Morro Bay 3, 4	None	Yes	600	83	0.524
Moss Landing 6, 7	None	Yes	1,404	1,375	0.661
Moss Landing 1, 2	None	No	1,080	5,791	0.378
Ormond Beach 1, 2	Ventura	Yes	1,612	783	0.573
Pittsburg 5-7	SF Bay	Yes	1,332	180	0.673
Potrero 3	SF Bay	Yes	207	530	0.587
Redondo Beach 5-8	LA Basin	Yes	1,343	317	0.810
South Bay 1-4	San Diego	Yes	696	1,015	0.611
Merchant-Owned Total			**15,254**	**17,828**	**0.605**
Total In-State OTC			**23,030**	**57,817**	

Table Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

Table Note 1: Units are aging but are not OTC.

Table Note 2: OTC Humboldt Bay Units 1 and 2 are included in this list. They must retire in 2010 when the new Humboldt Bay Generating Station (not ocean-cooled), currently under construction, enters commercial operation.

Table Key: GHG = greenhouse gas; GWh = gigawatt hours; LA Basin = Los Angeles Basin; LADWP = Los Angeles Department of Public Works; $MTCO_2$/MWh = metric tons of carbon dioxide per megawatt hour; MW = megawatts; OTC = once-through-cooling; SF Bay = San Francisco Bay.

3.4.4 Existing Conditions on the Project Site

There are currently no man-made sources of GHGs on the IVS project site. The site is unimproved desert landscape with native vegetation. The area has open routes included in the *Western Colorado Desert Routes of Travel Designations* (WECO) amendment and therefore there are some GHG emissions from recreational uses. These emissions are nominal, but are included in the baseline data. There are no existing "point source" GHG emissions at the site.

3.5 Cultural and Paleontological Resources

3.5.1 Regional Setting

3.5.1.1 Geology

The Imperial Valley Solar (IVS) project site is in the western part of the Salton Trough, a topographic and structural depression in the Colorado Desert physiographic province. It is bounded by the Coachella Valley to the north, the Gulf of California to the south, and mountain ranges to the east and west. The Salton Trough is filled with marine and poorly sorted clastic fluvial sediments up to 15,000 feet (ft) thick (Dibblee 1954). The basement of the Salton Trough is composed of Late Cenozoic and older crystalline igneous and metamorphic rocks. Extensive studies by the United States Geological Survey (USGS) in Imperial County indicate that the sub-basement, or lower crust beneath the axis of the Salton Trough, is composed of a mafic intrusive complex similar to oceanic middle crust (Fuis and Kohler 1984).

3.5.1.2 Geomorphology

The IVS project site and the surrounding area represent a microcosm of the geomorphic conditions in the Yuha Desert. There are Pliocene and Pleistocene nonmarine sedimentary rock outcrops along the southern boundary of the IVS project site. As with most large alluvial fans, these Quaternary landforms are composed of numerous remnants and more recent deposits of varying ages. By examining the relationship between these landform components, relative age estimates can be developed, conclusions may be drawn as to the depositional history of that landform, and the potential of each landform to harbor buried paleosols of appropriate age can be determined.

During the Pleistocene glacial age, the Salton Trough was occasionally inundated by floodwaters of the Colorado River. There is evidence that there were several separate lake episodes during this period (Singer 2008). The most recent natural lake episode occurred circa (ca.) AD 1200–1600, when the Colorado River began emptying into the Salton Trough and created a massive lake (as much as 95 meters deep) called Lake Cahuilla (Waters 1983). The IVS project site and the surrounding areas are near the western shoreline of the former Lake Cahuilla. The lowest part of the Salton Trough is currently occupied by the Salton Sea, a human-made inland lake with no natural outlet.

3.5.1.3 Climate

The climate at the IVS project site can be characterized as hot and dry. According to climate data gathered at El Centro, California, between 1948 and 2007, the area experienced average annual maximum temperatures of 88.6 degrees Fahrenheit (°F) and average annual minimum temperatures of 56.6°F. The highest average maximum monthly temperature occurs in July (107.6°F), and the lowest minimum average monthly temperature occurs in December (39.9°F). Precipitation has been recorded in all months except June and averages 2.6 inches per year. Most of the precipitation falls from August to March (2.4 inches) in the form of rain. Snowfall was not recorded in this area during the reporting period.

3.5.1.4 Flora and Fauna

The majority of the vegetation on the IVS project site is Sonoran creosote bush (*Larrea tridentata*). Other vegetation observed on the project site includes screwbean mesquite (*Prosopis pubescens*), desert sunflower (*Geraea canescens*), sand verbena (*Abronia ameliae*), burroweed (*Ambrosia dumosa*), desert needlegrass (*Achnatherum speciosum*), scale bud (*Anisocoma acaulis*), prickly poppy (*Argemone munita*), Borrego milk vetch (*Astragalus lentiginosus* var. *borreganus*), desert holly (*Atriplex hymenelytra*), yellow cups (*Camissonia brevipes*), white mallow (*Eremalche exilis*), pygmy poppy (*Eschscholzia minutiflora*), ocotillo (*Fouquieria splendens* ssp. *splendens*), annual psathyrotes (*Psathyrotes annua*), desert hollyhock (*Sphaeralcea ambigua*), Emory's desert mallow (*Sphaeralcea emoryi* var. *emoryi*), tamarisk (*Tamarix chinensis*), desert lily (*Hesperocallis undulata*), Indian ricegrass (*Achnatherum hymenoides*), and smoketree (*Psorothamnus spinosus*). The creosote-scrub habitat that typifies the IVS project site and the surrounding area was established at lower elevations by the Late Pleistocene, indicating that people inhabiting the area would have had access to similar natural resources throughout much of prehistory.

The region surrounding the IVS project site also supports a diversity of common desert wildlife including rabbits, rodents, deer, and big horn sheep. Some of the more uncommon species include the desert horned lizard (*Phrynosoma platyrhinos*), burrowing owl (*Athene cunicularia*), Le Conte's thrasher (*Toxostoma lecontei*), and the American badger (*Taxidea taxus*).

3.5.2 Cultural Setting

3.5.2.1 Prehistoric Background

Paleoindian Period "San Dieguito" (12,000 to 7,000 Years Before Present)

San Dieguito is the earliest established and dated cultural period for the Colorado Desert region (Weide 1976). The start of the Paleoindian Period is marked by increased rainfall and cooler temperatures that resulted in the formation of deep pluvial lakes and marshes even in the interior desert regions and offered a multitude of subsistence options. Although temperatures warmed and the lakes began to recede around 11,000 years before present (YBP) (Moratto 1984), that recession was so gradual that the pluvial lake environment was still in existence for several millennia.

These cultural patterns composed the Western Pluvial Lakes Tradition, which included developing methods of procuring foods and materials based on the plants and animals that lived around the lakes. In particular, marshes offered a variety of plants and animal resources. Sites adjacent to the west and south of the former shore of Lake Cahuilla reveal that these people had developed a flaked-stone industry with an extensive number of tool forms, including ovate bifaces, chipped stone crescents, drills, cleavers, pulping planes, and keeled scrapers (Rogers 1989). Milling tools are conspicuously absent from these sites, implying that hard seeds were not included in the diet (Moratto 1984).

Archaic Period (7,000 to 3,000 Years Before Present)

The increase of groundstone tools and projectile points in the archaeological record is the primary difference between the Archaic Period and the earlier Paleoindian Period. In the absence of chronometrically datable materials, temporally diagnostic artifacts distinguish the occupational period. Pinto series (stemmed indented) projectile points define the Early Archaic, while Elko (corner-notched and side-notched) and Gypsum (contracting stem) points represent the later Archaic periods (Apple et al. 1997). Groundstone artifacts are also common on Archaic sites in the area, especially on open camps, which are mostly located in the transitional zone between and within the Fan Apron landforms in the central part of the project area and the Beach Zone.

Pinto points have also been recorded at sites along relict terraces on the northern shore of Ancient Lake Cahuilla. These sites indicate the lake may have refilled temporarily during this

period (Weide 1976). The presence of these sites and a quartz point of unspecified type from a stratum radiocarbon-dated at 4,980 YBP (Weide 1976) suggest the Colorado Desert region was not entirely unoccupied during the early and middle parts of the Archaic Period; however, people may have been present only on a seasonal basis because of a lack of resources (Fagan 2003). As the presence or absence of Lake Cahuilla is not well known from this period, the scarcity of sites may indicate that the Salton Trough was generally dry (Schaefer and Laylander 2007).

The evaporation of the Lake Cahuilla lakes also caused a shift in flora to plants adapted to arid climates. The hard seeds of mesquite (*Prosopis juliflora*) and screwbean (*Prosopis pubscens*) and foods from other desert-adapted plants, such as various types of cactus and agaves, became staples of the Native American diet (Barker 1976). Groundstone tools, including manos, metates, mortars, and pestles, were developed to aid in the processing of these new foods, and are commonly found in artifact assemblages throughout the Mojave and Colorado Deserts (Moratto 1984). In addition to stone tools, people of the Colorado Desert may have made wooden milling utensils and other artifacts of organic materials that are usually not preserved in the archaeological record. Ethnographic records show use of wooden mortars and pestles, items such as hooked sticks for shaking mesquite pods down from trees, nets in which to collect cactus and then beat against the ground to remove the needles, digging sticks for excavating rodents from burrows or digging up plants, and throwing sticks for hunting hare and other small game (Barker 1976). These tool types likely persisted for millennia with little change in technology or style.

Late Prehistoric Period (3,000 Years Before Present to European Contact–AD 1769)

Late prehistoric assemblages are typified by the profusion of the Desert side-notched and Cottonwood arrow points, which replaced the larger projectile point traditions of earlier eras (Jones et al. 2007). These smaller points indicate the introduction of the bow and arrow and the replacement of the atlatl (Moratto 1984). These projectile point types are common throughout California during this period and into the historic period (Justice 2002).

During this period, people began to occupy permanent settlements and exploit seasonal food sources. Trade networks between coastal peoples and the occupants of the desert interior began to develop around AD 1000. This development is apparent in the archaeological record by the exponential increase in shell beads in Colorado Desert sites (Fagan 2003). In addition, ceramic wares, which had been introduced centuries before in other areas, were brought into this region with the influx of people. Beginning around AD 870, Patayan I ceramic types such as Colorado Beige, Colorado Red, and Black Mesa Buff appear on the shoreline of Lake Cahuilla

(Schaefer and Laylander 2007). The Lower Colorado Buff wares, in common use since AD 800, show new attributes around AD 1050, such as stucco finishes, recurved jar rims, and tab handles on scoops. These attributes aid archaeologists in dating sites that appear in the area (Moratto 1984).

Around AD 1400, the course of the Colorado River shifted east, and as Lake Cahuilla gradually dried up, native peoples were confined to a decreasing fertile area (Moratto 1984). As the lake receded, surrounding areas experienced an increase in occupation as the population shifted to more abundant lands, such as the Colorado River Valley and mountains to the west of the Salton Trough (Weide 1976, Moratto 1984). People persevered in this desert environment, as evidenced in a series of stone-lined fish traps marking the progress of the receding waterline (Moratto 1984). As subsistence resources disappeared along with the lake, people also attempted to rely on limited agriculture. As the aridity increased, the local inhabitants expanded their use of the existing resource base to include several hundred plants for food manufacture and medicine (Fagan 2003). Evidence of water control techniques, such as the use of wells and springs for irrigation and the construction of reservoirs and ditches, is apparent (Weide 1976).

Materials used in projectile point production include chalcedony, chert, quartzite, quartz, fine-grained basalt, andesite, and obsidian. Isotropic materials such as obsidian were preferred sources for projectile points, and the receding shoreline of Lake Cahuilla exposed an ideal obsidian source, Obsidian Butte, which is between 131 and 230 ft above mean sea level (amsl) at the south end of the Salton Sea. This lithic source was exposed intermittently during the Late Prehistoric period and subsequently exploited for use in flaked stone tool manufacture. Although a local source of obsidian was available, its application to tool manufacture was supplementary and accounts for no more than 10 percent of debitage assemblages from montane and coastal southern California. Obsidian hydration dates for the source range from AD 1200 to 1800 (Laylander 1997).

3.5.2.2 Ethnographic Background

Potential traditional use areas have been identified north, northeast, and south of the IVS project site. The IVS project site is surrounded to the west by Fish Creek and the Coyote Mountains, to the northeast by Superstition Mountain, to the east by the Chocolate Mountains and Indian Pass, and to the south by Mount Signal. All these landforms are associated with archaeological deposits and were dominant geographic elements in the prehistoric landscape. Several significant geoglyphs related to Yuman origin stories have been recorded south of the IVS project site. Archaeological material similar to the deposits at the IVS project site have been described at sites south of Palm Springs and north of Coachella on the northern extent of the high water mark of Lake Cahuilla (Love and Dahdul 2002).

The ethnographic literature establishes that all Native American tribes associated with the project area cremated their dead. All the tribes used trails for transportation and exploited the environment similarly. Although each group had a specific approach to creating ceramics, these items were traded, along with shells and localized meats and vegetables. Data gathered on the ceramics in the IVS project site show evidence of a variety of ceramic types such as Tizon Brownware and Colorado Buffware. Prehistoric trade networks and trails in the IVS project site may have ultimately brought much of the surface deposits to the IVS project site. Trails represent both economic (trade routes) and transportation, and are associated with ritual activities. Open camp sites containing hearth features, groundstone, ceramics, and lithic tools represent domestic use, subsistence procurement and processing activities, and settlement patterns in the IVS project site. It is unlikely that surface evidence would directly relate the IVS project site to a particular tribe. Currently, it appears that the region in which the project site is located was exploited primarily by the Kumeyaay. Other groups associated with the project area include the Cahuilla, Quechan, and Cocopah.

Kamia (Kumeyaay, Ipai-Tipai)

A 1925 inventory of California Indian Groups found that the Salton Trough was occupied at least intermittently by the Kamia, a subgroup of the larger Kumeyaay tribe. Collectively, the Kumeyaay were part of the same Yuman language group but were split into two main geographic and dialect groups, Ipai and Tipai, within the southern California region. The Ipai occupied the northern area and the Tipai occupied the southern area. The Kamia are related to the southern Tipai group, and are concentrated in the eastern San Diego County and Imperial Valley area.

Together, the Ipai and Tipai ranged from the Colorado Desert to the coast and along the coast from Agua Hedionda past the Todos Santos Bay. The Tipai were thought to have lived along the coast and in the mountains for millennia before migrating east into the Mojave Desert and south along the Colorado River around AD 1000; eventually the Tipai people moved farther into the Colorado Desert, including the area around Lake Cahuilla. As Lake Cahuilla receded, some Tipai migrated back to the mountains and others relocated to the banks of the New River and the Alamo River.

At the time of European contact, the Kamia band occupied a small area found primarily in Imperial Valley. A population of 254 Kamia was recorded living along the banks of the New River in 1849. The Kamia kept in close contact with the Tipai that occupied the peninsular ranges to the west of the Colorado Desert. Although the Kamia spoke a different dialect and had a different social structure and subsistence collection methods, they would frequently exchange agricultural produce with their Tipai neighbors for gathered food staples that were abundant at

higher elevations, such as acorns, dried cakes of mescal, and piñon nuts. Interaction between the Kamia and the Tipai was so extensive that it was difficult to define a territorial boundary between the two.

The Kamia created pottery using the paddle-and-anvil technique and produced the greatest variety of ceramics among the Kumeyaay bands (Rogers 1973). Included in the assemblage were ollas, jars, canteens, bowls, rattles, plates, scoops, cups, and parchers. They also created small figurines with coffee bean shaped eyes, which were also traded with other bands and miniature vessels that may have been potential funeral offerings (Van Camp 1979). Clay for ceramics was obtained from old lakebed deposits in the central region of the Colorado Desert. Some Kamia ceramics had a small amount of crushed rose quartz added to the temper, while others contained very fine inclusions. The surface color of the ceramics varies from pink, to buff, to oyster white (Rogers 1973). After firing, designs were painted with red and/or black designs. The coloring was obtained from red ochre and boiled mesquite bark (Gifford 1931).

The Kamia were a semisedentary people who, in contrast with the rest of the Tipai, practiced horticulture during summer months, after the floods of the Colorado River had peaked (Luomala 1978, Barker 1976). Crops such as maize (*Zea mays*), tepary beans (*Phaseolusacutifolius* var. *latifolius*), and several species of gourds and melons were grown as were cowpeas (*Vigna sinensis*), which had been introduced by the Spanish (Barker 1976). Irrigation canals were typically not used in most areas, with the exception of the Jacumba Valley, but occasionally sloughs were dammed to thoroughly soak an area before planting (Gifford 1931). Agricultural practices were supplemented by gathering wild plant foods, with a particular reliance on mesquite and screwbean (Barker 1976). They also practiced hunting rabbits, deer, sheep, and small mammals, and fishing in sloughs around the New River (Barker 1976). The last Kamia chief died in 1905 and was not replaced because the population was too scattered (Barker 1976).

The Kamia apparently also had strong relationships with another group of Yuman speakers, the Quechan tribe to the east, who occupied the Colorado River Valley. The two tribes were so familiar with each other that it was reported in 1849 that the Grand Chief of the Cuchans (Quechan) was a Kamia who was born in a New River settlement. The two tribes shared many traits, including the practice of agriculture, and frequently were allied in battle. As with the Kumeyaay, friendly relations made territorial boundaries between the Quechan and the Kamia difficult to ascertain, and Kamia were recorded living in Quechan territory on the west bank of the Colorado River

Cahuilla

Some overlapping of territory may also have occurred with the Cahuilla, whose boundaries lay close to the north of the project site, extending from the Salton Trough up to the San Bernardino Mountains. No record of interaction with the Kamia exists; the Cahuilla preferred to trade and intermarry among tribes more closely related to their own language and culture, such as the Gabrielino, found along the coast near present-day Los Angeles. Their language belongs to the Cupan subgroup of the Takic family of Uto-Aztecan stock. Because the environment of the Cahuilla was similar to that of the Kamia, subsistence tactics were essentially the same for both, though the Cahuilla relied less on agriculture.

The Cahuilla oral traditions include numerous accounts of the existence of a lake in the Salton Sea basin. William P. Blake was the first European to document these traditions in the mid-19th century. The Cahuilla had limited contact with the Kamia. The linguistic and cultural differences between the tribes were enough to limit the communication between the tribes. Though these cultures existed adjacent to each other and the Ancient Lakeshore, it is possible that variations in settlement and subsistence practices can be identified. Modern research conducted along the receding Lake Cahuilla shoreline has exposed extensive cultural deposits associated with a lacustrine environment (Apple 1997).

Quechan

The Quechan lived in a series of settlements called *Rancherias,* which were scattered along the banks of the Colorado River. These settlements were moved seasonally, as the Colorado River would typically flood during the spring and then recede during the winter. The Quechan were primarily agriculturists, growing crops of maize, squash, and beans. After the European settlement ,they also grew a variety of melons, wheat, and black-eyed peas. They supplemented their diet by gathering wild plants such as mesquite and screw bean pods. Fish from the Colorado and Gila Rivers was also a staple of the Quechan diet, but hunting was relatively unsuccessful due to the harsh desert climate (Bee 1983). The Quechan used a variety of nets and fish traps, along with cactus spine hooks and the bow and arrow, to fish during the spring and fall months when the fish were most plentiful (McGuire 1982).

The lower Colorado River tribes were organized militarily and warfare played a significant role in Quechan life. The Cocopah and Maricopa were enemies of the Quechan. The Quechan would join their Mohave neighbors to the north and strike out against their collective enemies (Bee 1983). The Quechan most likely acted as middlemen who extracted part of the trade goods in exchange for safe passage through pre-contact trade routes at the Colorado River crossing. After European contact, this role may have increased conflict with the Spanish and other tribes, as trade with the Spanish became an economic factor.

The Quechan created pottery using the paddle-and-anvil technique; their long pottery tradition was inherited from the Patayan (Moratto 1984). Their pottery included large storage vessels they used to float food and other goods across the Colorado River (Hayes and Blom 2006). Other types of ceramics made by the Quechan included bowls, parchers, cooking pots, small figurines, and a floating bowl considered rare that was used by women to hold perishables and infants, which could be pushed ahead as they swam through the river (Campbell 1999). These ceramics demonstrated transport of Colorado River ceramics as far west as the Peninsular Range, almost certainly passing through the IVS project site, around the southern shore of the lake (Hildebrand et al. 2002).

Cocopah

The Cocopah, also part of the Yuman language family, occupied an area along the lower Colorado River and its delta, south of the Quechan and extending into northwestern Mexico. Their habitat was somewhat unique, as the summer floods from the Colorado River improved the quality of the land, animals, and vegetation in the delta (Alvarez de Williams 1983). The Cocopah were semi-nomadic, hunter-gatherers who also used the delta region of the lower Colorado River to farm crops including beans, squash, and maize.

They supplemented their crops with wild plants such as mesquite, screw bean pods, cattail reed pollen, and tule roots. Game was plentiful and the Cocopah hunted deer, wild boar, rabbits, wood rats, and beavers. They fished in the rivers using nets made from plant fibers, basketry traps, spears, and, at times, the bow and arrow.

Warfare was part of Cocopah life. As previously noted, the Quechan were one of their enemies. However, unlike the Quechan, the Cocopah had a vast array of weapons, which included hardwood daggers, wooden war clubs, spears, and bows and arrows. Cocopah bows were typically 5 ft or more in length, painted, and the bowstring was made of three-ply plant fibers or sinew. Arrows were made from cane or arrow weed and at times were gall-tipped for poison (Alvarez de Williams 1983).

The Cocopah were introduced to pottery manufacturing around AD 700 and became very skilled at creating ceramics. They created a variety of vessels used for storage and cooking using the paddle-and-anvil technique. Clay was ground and winnowed, then a temper of ground sherds was added. Firing was done in a shallow pit or open area using mesquite chips, dung, or arrow wood for fuel. The Cocopah also used stone and clamshell knives, stone metates and manos, awls made from wood and bone, and canteens made from gourd or clay for travel (Alvarez de Williams 1983).

3.5.2.3 Historic Background

Spanish Period (1540 to 1821)

The Spanish Period describes nearly three centuries of Spanish exploration and settlement in the northern Sonoran Desert part of New Spain, beginning with the 1542 expedition of Juan Rodriguez Cabrillo and ending with the Treaty of Córdoba that established Mexican independence. The period is dominated by Spanish attempts to link their territories in Mexico and New Mexico with their outposts in California and protect their possessions from encroachment by other world powers, such as Britain and Russia. Several expeditions were sent out, especially toward the end of the 18th century, to develop a trail system connecting Sonora to California. One of these expeditions, led by Captain Juan Bautista de Anza, set out in 1774 from the mission in Tubac, south of present-day Tucson, Arizona, to find an appropriate overland route to the missions in Alta California. The exploratory expedition, in 1774, established a viable overland route to Mission San Gabriel and the Presidio of Monterey via El Camino Real. The Colonizing expedition in 1775–1776 brought approximately 240 persons (colonists, soldiers, and other support staff) and about 1,000 livestock (cattle, horses, mules) to establish the Presidio and Mission at San Francisco. The same settlers established the Pueblo of San Jose in 1777. The route established by Anza was also followed by another Spanish party in 1781 to establish the Pueblo of Los Angeles and the Presidio and Mission at Santa Barbara. Anza was assisted by a small group of soldiers and two Franciscan friars, one of whom was Francisco Garcés. They succeeded in establishing small settlements along the Colorado River but several years later, the Yuma Indians reacted to ill treatment by the Spanish and attacked their villages, killing many of the settlers. By the close of the 18th century, no reliable overland route to the settlements along the Pacific Coast had been established, and the Spanish continued to rely on sea-going vessels to supply those settlements.

The route established by Anza has been designated the Juan Bautista de Anza National Historic Trail (Anza Trail). The Anza Trail is co-managed by the United States Bureau of Land Management (BLM) and the United States National Park Service (NPS). The designated corridor for the Anza Tail is a 2.5-mile (mi) wide linear alignment that runs south-north through the IVS project site and the IVS project Area of Potential Effects (APE). According to the NPS, the Anza Trail approaches the IVS project site from the south, running past Mount Signal until it comes to Yuha Well (both these areas are south of the boundary of the IVS site). The corridor continues north into the project site and passes generally through the Plaster City area, continuing north to the San Sebastian Marsh where the corridor turns west and into the mountains. There are three designated camp sites in Imperial County in the vicinity of the APE: Expedition Camp #47, Yuha Well; Expedition Camp #48, Plaster City area; and Expedition Camp #49, San Sebastian Marsh/San Felipe Creek. None of these sites is within the boundary

of the IVS project site. Camp #47 is south of the project APE and Camps #48 and #49 are north of and outside the APE.

The historic Anza Trail can be experienced today by following a recreational trail that generally parallels the path of the expedition. In the project area, the BLM has identified the recreational trail by a connecting series of dirt roads. Many designated routes cross the historic corridor for the Anza Trail, but only a few are designated as the Anza Trail recreation route. The Anza Trail corridor is crossed and paralleled by several designated driving routes: BLM Roads 085, 151, 274, 243, and 355. Some of these roads include Anza Trail signage. During the 1775 colonizing expedition, Juan Bautista de Anza wrote the following about his travels in this area when camped at Yuha Well Camp #47 the night of December 11 and at Camp #48, which is a wash north of Plaster City, on December 13:

> "**Tuesday, December 12.** At two o'clock in the morning I set to work at the wells, and at this time we began by the light of the moon to water the rest of the saddle animals, and we also watered again those which had drunk the night before. As a result, before ten o'clock all were satisfied, and the wells were running so freely that from today forward, so long as they are kept clean, they are capable of furnishing, with some delay, all that is necessary for three hundred or more animals. And there would be a still greater abundance if the wells should be given secure curbing, for in this case they would be a vara deeper than at present. This accomplished, in spite of the strong, cold wind which has continued we set forth on the march at half past twelve, going north-northwest, with some turns to the north. In this direction and over good terrain we traveled about four leagues in as many hours, at the end of which we halted at the only site where there was firewood and pasturage, because fuel was extremely necessary as a protection from the severe cold, and to await the rain which was threatening from all directions. -- 32. From Tubac to the plain before arriving at San Sebastián, 109 [139] leagues.
>
> "**Wednesday, December 13.** Day broke with threatening signs of snow, and indeed at daylight a few flakes fell, and it was seen that they were more abundant in the sierra which we had near by on our left. Nevertheless we set forth on the march at half past eight, going north-northwest over better terrain than the day before. We traveled in this direction about five and a half leagues, finishing the day's march by going another league and a half to the north, in order to reach the Marsh of San Sebastián, which we succeeded in doing at half past three. The few heathen who live here came out to welcome us with great demonstrations of affection. At the time when we halted the strong cold wind,

> which had been very hard on our people, especially the women and children, quieted down somewhat. The sky also cleared a little more, and we were able to see that the sierras through which we had to travel were more deeply covered with snow than we had ever imagined would be the case. Taking advantage of this quiet weather, I had all the firewood gathered that was possible, though it was not much because the region is lacking in it, in order to withstand the cold wind which came up again with great force at five o'clock with preludes of rain and snow. These inclemencies continued until night. -- 33. From Tubac to the Ciénega de San Sebastián, 144 1/2 leagues."

Pedro Font (1775) writes:

> "**December 12.** We set out from the Pozos de Santa Rosa at a quarter to two in the afternoon, and, at a quarter to five, halted in a dry gully, having travelled three leagues to the north.
>
> "**December 13.** We set out from the dry gully at nine in the morning, and, at half-past three in the afternoon, arrived at San Sebastián, which is a small village of the mountain Cajuenches, having travelled some seven long leagues to the north-northwest, with a slight inclination to the north."

No archaeological evidence of the Anza expedition was located during the survey of the APE for the IVS project site. The transitory nature of the expedition, along with the harsh environment that the group passed through, ensured that few physical traces remain. In 1996 the NPS noted: "Little historic fabric remains from 1775–76. Even the missions which Anza visited have changed, for they were temporary structures at the time of his visits." The expedition was often guided by indigenous tribal members and used established Native American trails, paths, or sites (such as villages). Some Native American sites such as Yuha Well (south of the IVS project site) have been surveyed and recorded. It is not known if any archaeological sites directly related to the Anza expedition have been found anywhere along the length of the Anza Trail in Mexico, Arizona, or California.

Mexican Period (1821 to 1848)

The Mexican Period opens with the observation that Spain's influence in the world and its role as a colonial power waned at the beginning of the 19th century following the Napoleonic Wars. As a result, Spain began to relinquish some of its colonies in the New World. In 1821, following other uprisings in Florida and Texas, Augustin de Iturbide led a successful coup of the Spanish colonial government in Mexico City. In August 1821, Spain capitulated and signed the Treaty of Córdoba with Iturbide and the insurrectionists, and Iturbide declared himself Agustin I, emperor

of New Spain. His despotic rule did not last long, however, as Antonio López de Santa Anna led a successful coup and deposed Iturbide in 1824. Against the backdrop of these larger events, developments in the Sonoran Desert passed relatively unnoticed by the Mexican government, except when horse thieves were chased through the area. In 1826, Sub-Lieutenant Romualdo Pacheco, the aide-de-camp to the governor of Mexican California, and his troops built a small fort approximately 6 mi west of present-day Imperial Valley. After a band of Kumeyaay attacked the post in April 1826 and killed three soldiers, Pacheco abandoned the post and led his remaining troops to San Diego. Imperial County served as the route for the American expedition that ended Mexican rule of California. In 1846, Brigadier General Stephen Kearney led the Army of the West from Fort Leavenworth, Kansas, that first captured Santa Fe, New Mexico. From there, the Army marched across New Mexico and helped seize Tucson, Arizona. The force then continued west across the Sonoran Desert to San Diego, arriving in January 1847.

Few, if any, development activities were conducted in the northern territories of Mexico during this period. The Sonoran Desert was nearly forgotten and only referenced as Indian (Yuman) horse thieves were chased through the desert. In 1826 and 1827, Romualdo Pacheco, who would become the first California-born governor of the State of California and was Sub-Lieutenant, Engineer officer, and aide-de-camp to the governor of Mexican California, made several exploratory expeditions through the region (Stott 1950). In 1831, a group of Anglo-American traders departed St. Louis, headed for Santa Fe, traveled through the Sonoran Desert, and ended in San Diego. One person of note in this trip was Jonathan Trumball Warner of Connecticut, who was a clerk on the expedition (Stott 1950). Warner later acquired San Jose Valley in San Diego County. The valley became known as Warner's Ranch, a name which it retains to this day.

American Period (1848 to Present)

The Anglo-American colonies established in Texas in the 1820s eventually rebelled and gained their independence from Mexico in the Texas War of Independence in 1836. The newly established Republic of Texas maintained its independence until 1845, when it petitioned for annexation to the United States. When this annexation was completed in 1845, during the presidency of James K. Polk, the stage was set for war between an outraged Mexico and the United States. Border tensions escalated and the result was war and the United States invasion of Mexico in 1846.

By 1848, the United States had prevailed over the Mexican army and the Treaty of Guadalupe Hidalgo ended the war. By the terms of the treaty, the United States acquired all Mexican territory north and west of the Rio Grande and Gila Rivers, including Texas, New Mexico territory, and Alta California. In the same year, Anglo-Americans discovered gold in the

mountains of California, and the resulting gold rush brought a huge influx of Anglo-American settlement to the State. This settlement transformed California from a Hispanic backwoods frontier to the new Anglo-American Golden State, which was admitted to the Union as the 31st state in 1850.

Early Settlement in the Imperial Valley

The settlement of the Imperial Valley owes much of its early history to Dr. Oliver M. Wozencraft. In 1849, Wozencraft, on his way to gold fields near San Bernardino from New Orleans, traveled through the Imperial Valley and noted the soil fertility and potential for arability. He was likely the first Euro-American to recognize the valley's potential for agriculture, and he noted that because the Colorado River was much higher than the valley, it would be feasible to irrigate using a gravity canal from the Colorado River (Garnhoiz 1991).

Wozencraft's opinion of the fertile valley was reaffirmed in 1853 when Jefferson Davis, Secretary of the United States War Department, ordered a scientific expedition along the Colorado River for the placement of fortifications. In this expedition, which was led by Lieutenant R.S. Williamson and William Phipps Blake, a professor at Yale College, the particular fertility of the alluvial soil at the southern end of the Salton Trough was noted. Blake's expedition in the Salton Trough was the most scientific of its time and included soil scientists, geologists, geographers, and paleontologists. It was Blake's expedition that first scientifically described how the Colorado River had meandered through the valley, delivered enough silt to block the mouth of the Gulf of California, and recognized that the banks of the current Colorado River course were much higher than that of Imperial Valley (Smith 1979). During the 19th century, the Colorado River flooded the valley in 1840, 1842, 1852, 1859, and 1867(Garnhoiz 1991).

Development of Canals and Irrigation

With the information gathered from the scientific expedition, Wozencraft pressed California into granting him approximately 1,600 square miles (sq mi) or 1,024,000 acres (ac), essentially the entire present-day Imperial County and parts of Riverside County. However, the United States Federal government retained the title to that land, and Wozencraft was unable to convince Congress, even with the results of the scientific analysis of the valley, to support his efforts. Although Wozencraft failed to create an irrigation network, his efforts during the mid-19th century led the way for future irrigation development efforts.

Between 1893 and 1894, the Colorado Irrigation Company, under the direction of Chief Engineer Charles R. Rockwood, followed up on Wozencraft's earlier attempts to irrigate the Imperial Valley. Under the direction of George Chaffey, an extensive canal system was

developed in the Imperial Valley and across the border in Mexico. Diversions were built that took water from the Colorado River and channeled it into the Alamo River.

Almost immediately it was found that silt deposits, carried by the river, were fouling the diversions, head gates, and canals. In 1905, the water levels coming down the river were lower than usual, and the high levels of silt impeded the flow of water through the gravity-fed system. It was decided that a cut would be made in the side of the river, upstream from the silted-in parts, to allow a fuller flow. A temporary, wooden structure referred to as the Chaffey Gate was constructed with the assumption that the cut would be closed and the gate removed before the spring runoff (Sperry 1975, Tout 1932). Before this could happen, several floods poured down the river, and the fifth one completely destroyed the remaining gates and dams along the canal network system. The Colorado River, which had flowed toward the Gulf of California, had changed its course and started flooding the Alamo River to the Salton Trough in Imperial Valley. The Salton Sink began to fill, eventually becoming known as the Salton Sea. Frantic efforts were made to close the cut, but the river swept away each one.

The Coming of the Railroad

The railroad had reached the Imperial Valley several years before the county was organized. The Southern Pacific Railroad (SPRR) established a line from Los Angeles to Yuma in 1877 (Farr 1918). The line entered the valley near Betram and ran southeast through Niland to Yuma. This line eventually became part of the famed Sunset Route that linked Los Angeles with New Orleans (Solomon 1999). The SPRR soon had spurs or lines running to Calexico and El Centro, but not west to San Diego. In 1906, it was announced that the San Diego and Arizona Railroad (SDAR) had been formed, and work soon began on a direct line from San Diego to the SPRR line in El Centro. Construction was difficult and proceeded slowly. By 1914, some sections had been finished, including the line between El Centro and Dixieland. But the entire route was not finished until November 1919. The railroads quickly developed iced freight cars that could transport fruit and vegetables grown in the valley, a use that continues today. Pullman service was inaugurated between San Diego and Chicago, and passenger trains ran along this route until 1951, when declining ridership led the SPRR (which had purchased the SDAR in 1933) to end passenger service along this line (Dodge 1956).

Introduction of Electric Power to the Region

At about the same time that Rockwood and Chaffey were devising plans to irrigate the Imperial Valley, W.F. Holt was developing an idea to introduce electricity to the region using hydroelectric power. Holt formed the Holton Power Company in 1903 with the purpose of

constructing a 40 ft drop on the Alamo River. By 1916, the Holton Power Company was successfully producing enough energy to supply the needs of the entire Imperial Valley.

Mining Developments

Farther west on United States Highway 80 (Hwy 80) is Plaster City, a large drywall production facility that stretches for almost a mile along both sides of Hwy 80. In 1920, Samuel Dunaway formed the Imperial Gypsum and Oil Company to extract the estimated 25-million-ton gypsum deposit that lay on the west edge of the valley. An ore processing plant was built at a spot along Hwy 80 and the SDAR rail line, and a narrow gage rail spur brought the ore down from the mines. In 1922, the first load of processed gypsum was shipped from the valley.

The Desert Training Center Presence

The dry climate and large expanses of land brought the United States military to the valley during World War II. In early 1942, Major General George S. Patton was ordered to find a site suitable for large army units (divisions, corps, and armies) to train. A California native, Patton had participated in training exercises in the Mojave Desert. The United States Army began acquiring land for the Desert Training Center (DTC), also known as the California/Arizona Maneuver Area, which eventually covered 18,000 sq mi, making it the largest military base in the world. The area stretched from the outskirts of Pomona, California, east toward Phoenix, Arizona, south toward Yuma, Arizona, and north to the tip of Nevada (California State Military Museum [CSMM] 2008). Much of the land east of the Salton Sea and El Centro was consolidated into the DTC, and it is possible that training may have taken place in the open desert north and south of Plaster City as well. Artifacts including 0.50-caliber and 20-millimeter shells, military benchmarks, and ammunition belts were recorded during the survey of the IVS project site and appear to date to this period.

Camp Seeley

The United States Army established Camp Seeley on the north edge of Seeley, California, in November 1940. It was originally established and built to accommodate certain components of the 11th Cavalry Horse Regiment, including the First Squadron, Provisional Squadron, and the Regimental Headquarters. Camp Seeley was originally used to train men and horses in desert terrain and horse skills. Additional men were assigned to Camp Seeley in March 1941, when approximately 700 draftees were added to the regiment. Training continued through December 7, 1941, when the Japanese attacked Pearl Harbor. The Regiment at Camp Seeley was ordered to force-march to Camp Lockett, 5 mi southwest along the Mexican Border at the

town of Campo. After the 11th Cavalry left Camp Seeley, horse-drawn artillery units began to move into the camp (CSMM 2009).

Sand and Gravel Mining

The area has historically supported several types of mining activities, but the mining of building materials (crushed stone, gravel, sand, clays, lime, sodium, and gypsum) predominated (California State Mining Bureau [CSMB] 1916 and 1921). Early mining facilities include the Plaster City plant, whose mine was located several miles north of the IVS project site.

There are several historic sand and gravel pits in the APE for the IVS project. The Wixon Gravel Pit, which consists of three distinct areas of sand or gravel open-pit mining, is on the east edge of Section 5 of Township 16 South, Range 11 East. This open-pit mine is distinguished by linear and round cuts that are serviced by a packed dirt road leading from a dirt road east of Dunaway Road. The exact opening date of the gravel mine is unknown, but it is shown as a gravel pit on a 1940 USGS map, and an unimproved dirt access road to that mine is also shown (USGS 1940). A previous issue of that map, a 1915 reprint of a 1908 map, shows no gravel pits or roads within the boundary of the IVS project site. It should be noted that the map is marked sand just north of this gravel pit (Corps 1915). A 1943 United States Army Corps of Engineers (Corps) map shows the gravel pit and access road in the same place as the 1940 map, but that area is labeled on that map as the Wixon Gravel Pit (Corps 1944).

3.5.3 Cultural Resources Present within the Area of Potential Effects

3.5.3.1 Project's Area of Potential Effects

The APE is defined as the total geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties per 36 Code of Federal Regulations (CFR) 800.16(d). The APE is influenced by the scale and nature of an undertaking and includes those areas that could be affected by a project prior to, during, and after construction. For the IVS project, the overall APE has been defined to include a 15 mi radius around the project location. Specific APE's for the project are discussed below and include the methodology used to identify historic properties. Where historic properties could sustain direct physical effects as a result of the undertaking, the APE is defined to include:

(1) All areas subject to the BLM right-of-way (ROW) grant decision for the Phase I 300-megawatt (MW) and the Phase II 450 MW parts of the project site, which include

approximately 6,140 ac of public lands managed by the BLM and 360 ac of private lands. The area is generally bounded by Interstate 8 (I-8) on the south, Dunaway Road to the east, and the Evan Hewes Highway to the north and west. A 200 ft wide buffer around the APE was required to be included in the survey for cultural resources in the APE.

(2) The APE for linear elements in the IVS project is as follows:

(a) A ROW for an approximate 10 ft wide and 11.8 mi long water supply pipeline that would extend from the Seeley Wastewater Treatment Plant (SWWTP) to the IVS project site. The pipeline would be buried 30 inches below grade in the shoulder of the existing ROW of Evan Hewes Highway. A survey corridor for cultural resources for this linear element was established as a 75 ft wide buffer on either side of the centerline of Evan Hewes Highway (150 ft corridor) to allow for changes in the ROW to avoid cultural resources.

(b) A ROW for temporary or permanent access roads required outside the plant footprint is approximately 30 ft. A survey corridor for cultural resources for this linear element was established as a 50 ft wide buffer on either side of the centerline (100 ft wide corridor) to allow for changes in the ROW to avoid cultural resources.

(c) The ROW for the 230 kilovolt (kV) transmission line is defined as an approximately 100 ft wide, 10.3 mi long corridor that extends to the San Diego Gas & Electric Company (SDG&E) Imperial Valley Substation. A survey corridor for cultural resources for this linear element was established as a 150 ft wide buffer on either side of the centerline (300 ft wide corridor) to allow for changes in the ROW to avoid cultural resources.

Historic properties not located within the areas defined above that could sustain direct or indirect effects, including visual, auditory, and atmospheric, as a result of the undertaking is defined to include:

(1) Cultural resources identified through a review of existing literature and records search, information or records on file with the BLM or at the Southeastern Information Center (SIC), interviews or discussions with local professional or historical societies and local experts in history or archaeology. Specific areas of concern or cultural resources that were identified include:

(a) Cultural resources in the Yuha Desert Area of Critical Environmental Concern (ACEC).

(2) Any cultural resource or location which has been included in the Native American Heritage Commission Sacred Lands Files, identified through a literature review or records search, or identified by an Indian Tribe, Tribal organization, or individual through consultation as having religious or cultural significance. Specific areas of concern or cultural resources that have been identified through consultation include:

(a) Certain geological features or places to which the Tribes attach religious or cultural significance, including Signal Mountain and Coyote Mountain.

(b) Human remains located within or in proximity to the IVS project.

(c) Geoglyphs such as those within the Yuha Desert ACEC.

(3) Any cultural resource or location which has been 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. Areas identified through consultation include:

(a) Juan Bautista De Anza National Historic Trail (Anza Trail)

1. The Anza Trail corridor is designated pursuant to the National Trails System Act. The corridor has historic values as well as recreation and visitor experience values.

2. No identifiable and recognizable physical evidence or historic properties associated with the Anza Trail have yet been identified within the APE for direct effects. Specific areas of concern or cultural resources have been identified both south and north of the project location and include:

a. Yuha Well (Anza Camp #47)

b. Anza Camp #48

c. San Sebastian Marsh (Anza Camp #49)

(b) Sites associated with the 1781 Rivera Expedition

(4) Built-environment resources

(a) The APE is expanded to include a half-mile-wide buffer from the IVS project site boundary and aboveground linear facilities to encompass historic properties whose historic setting could be adversely affected. Specific areas of concern or

cultural resources have been identified both south and north of the project location and include:

1. Imperial Irrigation District hydraulic irrigation system components
2. Hwy 80 (Evan Hewes Highway) and remnants
3. SDAR
4. U.S. Gypsum Rail-Line
5. Plaster City Gypsum Plant

(5) Cultural resources identified through surveys where access was granted and windshield surveys where there was no allowed access within 0.5 mi of the APE for direct effects.

(6) Cultural resources identified through a review of the existing literature, information, and records search at the BLM El Centro Field Office and at the SIC for cultural resources that are located within a 1 mi buffer of the IVS project site and 0.25 mi from each linear project feature.

(a) Historic Districts and Landscapes

1. Yuha Basin Discontiguous Archaeological District

(7) Cultural resources identified through archaeological or other field investigations for this undertaking that, as a result of project redesign to avoid direct effects to cultural resources, no longer occur within the APE for direct effects.

(a) The original project was redesigned, eliminating approximately 1,200 ac of public lands on the east perimeter of the IVS project site to avoid effects to potentially significant prehistoric archaeological sites and burial sites, and reducing the generating capacity of the power plant from 900 MW to 750 MW.

The APE encompasses an area sufficient to accommodate all the proposed and alternative project components under consideration. The BLM has authorized the applicant to conduct specific identification efforts for this undertaking including a review of the existing literature and records, cultural resources surveys, ethnographic studies, and geomorphological studies to identify historic properties that might be located in the APE.

3.5.3.2 Class III Inventory

The applicant has retained URS Corporation (URS) and AECOM to complete all the investigations necessary to identify and evaluate cultural resources in the APE for both direct and indirect effects. URS is authorized to conduct cultural resources investigations on lands managed by the BLM under Cultural Resources Use Permits No. CA-06-01 and CA-06-11, issued by the BLM California State Office. URS is authorized to conduct specific field investigations for the IVS project under BLM Fieldwork Authorization CA-670-06-07FA09 and Fieldwork Authorization CA-670-06-07FA10.

URS has completed a review of the existing historic, archaeological, and ethnographic literature and records to ascertain the presence of known and recorded cultural resources in the APE, has conducted an intensive field survey for all the lands identified in the APE for direct effects for all project alternatives, and has completed intensive field surveys for alternatives on lands that are no longer part of the project. Approximately 7,700 ac of pedestrian survey to identify cultural resources in the APE have been completed. The ROW for which BLM would issue a grant for the IVS project encompasses approximately 6,251 ac of land, including the proposed 230 kV substation, the solar energy power plant, the Main Services Complex and associated electric and utility services, the sanitary system, access and entry roads, and corridors for the electric transmission line and the water supply pipeline. There are 360 ac of private land included in the IVS project which are regulated by the Corps under Section 404 of the Clean Water Act.

A draft cultural resources report (*Draft Final Class III Confidential Cultural Resources Technical Report, Application for Certification (08-AFC-5), SES Solar Two*, *LLC*, URS Corporation, June 2010) that presents the results of archaeological survey and historic built environment assessment in support of historic properties identification efforts has been submitted by the applicant to the BLM, the Corps, and the California Energy Commission (CEC). The BLM, Corps, and CEC are currently reviewing this documentation to determine whether the report conforms with the field methodology and site description template required by the BLM and CEC and is adequate to support the determinations and findings that the BLM will render pursuant to Section 106 of the National Historic Preservation Act (NHPA).

URS conducted a records search at the SIC in San Diego, California. The SIC searched all relevant previously recorded cultural resources site records and previous investigations completed within the project site and a 1 mi search radius around the site. Information reviewed included location maps for all previously recorded trinomial and primary prehistoric and historical archaeological sites and isolates; site record forms and updates for all cultural resources previously identified; previous investigation boundaries; and National Archaeological Database citations for associated reports, historical maps, and historical addresses. The

literature and records search identified 31 records related to cultural resources investigations conducted within 1 mi of the project site. Several of these records were for prior projects that overlap the boundaries of the IVS project APE. The record search also identified approximately 400 previously recorded cultural resources within the APE and extended survey areas.

Between January 9, 2008, and April 5, 2008, URS conducted an intensive cultural resources survey (also referred to as a BLM Class III survey) of the APE. In 2009, additional fieldwork took place over the course of a number of separate field efforts as directed by BLM. The additional field work was conducted to develop additional documentation for sites in the APE for the Phase I and II components of the IVS project. This work involved revisiting and updating approximately 302 sites recorded in 2008. Other project-related components included in the APE were also examined during the cultural resources investigations. These included the Imperial Valley Substation, which is an existing facility. The water pipeline and transmission line corridors were also surveyed for the areas within and outside the project site that are associated with the IVS project.

The final Class III intensive pedestrian survey of the IVS project APE identified 459 total cultural resources: 446 archaeological resources and 13 historic built environment resources. Of the 446 archaeological resources, 365 are archaeological sites (235 prehistoric, 71 historic, 43 multicomponent, and 16 indeterminate) and 81 are isolated finds. Appendix I, Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative, provides lists of the sites within the APE for the IVS project and the other Build Alternatives.

The solar energy power plant as originally proposed had a production capacity of 950 MW and encompassed approximately 7,700 ac. After considering the preliminary results of cultural resources investigations, the applicant redesigned and reduced the size of the solar energy power plant to 750 MW and excluded 1,200 ac from the project site to avoid direct effects to a high concentration of archaeological sites in that area. Surveys of this excluded area located 114 cultural resource locations. Of the 114 cultural resource locations, 90 are prehistoric, 9 are historic, 5 are multicomponent, and 21 are isolated finds. Sites in this excluded area include potential cremation or burial sites that Indian Tribes have indicated through consultation hold sacred or religious values and cultural significance.

One archaeological district with previously recorded sites is located in the 1 mi file search buffer outside the IVS project site. The Yuha Basin Discontiguous Archaeological District is outside and south and east of the boundary of the IVS project site and reflects prehistoric use of the area.

In addition, URS completed an intensive historic architecture survey to account for the properties that appeared to be older than 45 years within the historic architecture APE, which

extends 0.5 mi from the boundary of the IVS project site and 0.5 mi on either side of its aboveground linear facilities. URS also completed a supplemental reconnaissance-level historic architectural survey for five previously recorded historic period properties recorded in 2008 as being within a 0.5 mi radius of the IVS project site. The historic period properties included canals and drains associated with the Imperial Irrigation District hydraulic irrigation system, segments of Hwy 80, segments of the SDAR, segments of the U.S. Gypsum rail line, and the Plaster City Gypsum Plant.

The IVS project site is traversed by the Anza Trail corridor, which has been designated under the National Trails System Act. No physical evidence of the historic trail has yet been located in the APE for the IVS project. The nearest known and recorded sites associated with the Anza Trail are two campsites, one about 2.5 mi south of the project APE and one about 3 mi north of the project APE. The BLM is performing a review of the pertinent historic documents and satellite imagery analyses to assess the physical presence, if any, of the historic trail within the APE.

3.5.3.3 Other Resources Identified Through Consultation

Consultation with Indian Tribes and discussions with Tribal organizations and individuals have revealed concern about the importance and sensitivity of cultural resources in and near the IVS project site and that they attach significance to the broader cultural landscape. The contacts with Indian Tribes and Tribal organizations as part of the government-to-government consultation for the IVS project are summarized in Appendix F, Government-to-Government Consultation. Specifically, the Cocopah Indian Tribe and Kwaaymii Band of Laguna Indians have indicated that certain geological features hold significant value to the Tribe. Several Tribes have indicated that they attach sacred, religious, and cultural significance to the cremations/burials that have been identified within the APE.

Regarding the historic Anza Trail, the route of the designated historic corridor was the best approximation of the route that the Anza expedition traveled through the area, as interpreted from a review of expedition journals and maps. According to the NPS (phone call between Steven Ross, NPS, and Meredith Kaplan, ret. NPS, June 2010), the Superintendent of the Anza Trail, and primary author of the *Comprehensive Management and Use Plan* (CMUP), the historic corridor was mapped during preparation of the CMUP through a review and analysis of the Anza and Font journals and maps as well as Bolton's *Anza's California Expeditions*. Mapping of the historic corridor was also reviewed by local committees that were established in each county along the trail route. The official route map of the historic corridor as required by the National Trails System Act was plotted on 1:100,000 scale USGS topographic maps, which are referred to as the *Map Supplement* of the CMUP. The CMUP anticipates that the historic

corridor would be refined over time as new information or archaeological evidence became available.

3.5.4 Paleontological Resources

The Holocene alluvium and colluvium in and near the IVS project site contain abundant fossils including wood and invertebrates, most of which are probably reworked by erosion of older formations. However, the depositional environment of these sediments is considered to be conducive to the preservation of vertebrate and plant remains. Therefore, the paleontological sensitivity of the Holocene alluvium and colluvium within the IVS project site boundary is considered to be moderate.

Holocene lakebed deposits of ancient Lake Cahuilla have yielded fossil remains from numerous localities in Imperial Valley. These include extensive freshwater shell beds, fish, seeds, pollen, diatoms, foraminifera, sponges, and wood. Lake Cahuilla deposits have also yielded vertebrate fossils, including teeth and bones of birds, horses, bighorn sheep, and reptiles. Therefore, the paleontological sensitivity of these lakebed deposits within the IVS project site boundary is considered to be high.

The Pliocene-Pleistocene Palm Springs Formation has yielded thousands of fossils from more than 2,000 sites in Imperial Valley. These include a large range of fossil plants, invertebrate, and vertebrate species. Therefore, the paleontological sensitivity of the Palm Springs Formation within the IVS project site boundary is considered to be high.

3.6 Fire and Fuels Management

3.6.1 Setting and Existing Conditions

The project site is located in the western portion of the Salton Trough, a low-lying sedimentary basin once comprising a lakebed as recently as 300 years ago, which currently includes the Salton Sea, a man-made lake located approximately 23 miles northeast of the site. As such, the landscape is characteristically relatively level, though becoming more highly dissected and topographically varied as one progresses farther southward into the Yuha Desert.

The Salton Trough marks the western limit of the Colorado Desert, a section of the larger Sonoran Desert that extends across the southwestern U.S. and northern Mexico. Native vegetation cover of the region consists of Sonoran creosote bush scrub, a low-growing desert land-cover type characteristic throughout the Sonoran Desert and typical of the Colorado Desert as a whole, characterized by sparse, low-growing scrub, often interspersed with Ocotillo cacti. Throughout the region, large expanses of nearly vegetation-free desert pavement are also a characteristic element. Desert pavement consists of large areas of naturally exposed small rock and gravel. Therefore, the project site due to its arid location does not provide a large amount of fuels for wildland fires.

Fire support services to the site are provided by the El Centro Fire Department (EFD) located at 900 South Dogwood in El Centro. The response time to the IVS site from the EFD is approximately 30 minutes. The EFD also responds to hazardous materials incidents at the IVS facility. The response time and firefighting capabilities are acceptable given the remote location of the IVS site.

3.6.2 Laws, Ordinances, Regulations, and Standards

Currently, the IVS site is undeveloped and supports no habitable structures and activities on the site are limited to outdoor recreational uses such as off-highway vehicle trails. Therefore, the only laws, ordinances, regulations, and standards (LORS) concerning fire and fuels relate to wildland fires and fire risk. Table 3-12, shows the LORS that regulate fire/fuel risks.

Table 3-12 Fire Protection Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
The Federal Energy Regulatory Commission (FERC)	FERC requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, the minimum clearances required by state regulations are greater than the Federal requirements. In California for example, the state has adopted General Order 95 rather than the North American Electric Reliability Corporation (NERC) Standards as the electric safety standard for the state (CPUC and BLM 2008a). FERC is not discussed further.
Federal Wildland Fire Management Policy	The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a Federal multi-agency group that establishes consistent and coordinated fire management policy across multiple Federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems.
National Fire Plan (NFP) – Non-regulatory	The NFP was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The NFP addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability. The NFP continues to provide invaluable technical, financial, and resource guidance and support for wildland fire management across the United States. Together, the United States Department of Agriculture, Forest Service, and Department of the Interior are working to successfully implement the key points outlined in the NFP.
State	
2007 Edition of California Fire Code and all applicable National Fire Protection Association (NFPA) standards (24 CCR Part 9)	NFPA standards are incorporated into the California State Fire Code. The fire code contains general provisions for fire safety, including road and building access, water supplies, fire protection and life safety systems, fire-resistive construction, storage of combustible materials, exits and emergency escapes, and fire alarm systems.
California Health and Safety Code	State fire regulations are established in Section 13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Also, Section 13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their

Applicable LORS	Description
	equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.
California Fire Plan (2000)	The California Fire Plan is the statewide plan for reducing the risk of wildfire. One of the more important objectives of the plan regards pre-fire management solutions. Included within the realm of pre-management solutions are fuels breaks, the establishment of Wildfire Protection Zones, and prescribed fires to reduce the availability of fire fuels. In addition, the Fire Plan recommends that clearance laws, zoning, and related fire safety requirements implemented by state and local authorities address fire-resistant construction standards, hazard reduction near structures, and infrastructure (California Board of Forestry 2000). The Fire Plan does not contain any specific requirements or regulations. It acts as more of an assessment of current fire management practices and standards and makes recommendations on how best to improve the practices and standards in place.
California Public Utilities Commission General Order 95: Rules for Overhead Transmission Line Construction (2006)	General Order 95 governs the design, construction, and maintenance of overhead electrical lines. Rule 31.1 generally states that design, construction, and maintenance of overhead electrical lines should be done in accordance with accepted good practices for the given location conditions known at the time by the persons responsible for the design, construction, and maintenance of the overhead electrical lines and equipment.
California Department of Forestry and Fire Protection (CAL FIRE)	CAL FIRE is tasked with reducing wildfire-related impacts and enhancing California's resources. CAL FIRE is responsible for enforcing State of California fire safety codes included in the CCR and California Public Resources Codes. Public Resources Code 4291 states generally that any person operating any structure located on brush-covered lands or land covered with flammable material is required to maintain defensible space around the structure. CCR Title 14 Section 1254 identifies minimum clearance requirements required around utility poles. In State Responsibility Areas (SRAs) within the jurisdiction of CAL FIRE, the LE-38 Fire Safety Inspection Program is an important tool for community outreach and enforcement of state fire codes. CAL FIRE also inspects utility facilities and makes recommendations regarding improvements in facility design and infrastructure. Joint inspections of facilities by CAL FIRE and the utility owner are recommended by CAL FIRE so that each entity may assess the current state of the facility and then successfully implement fire prevention techniques and policies.

Applicable LORS	Description
Local (or locally enforced)	
County of Imperial Codified Ordinances Section 820.0100	The County of Imperial has adopted the 2007 California Fire Code in Section 820.0100 of the County Codified Ordinance does not have additional LORS that apply to Hazardous Materials Handling, but administers the State of California programs as the Certified Unified Program Authority (CUPA).

Table Source: Staff Assessment/Draft Environmental Impact Statement Table C.15.3.1 and LSA Associates, Inc.

Table Key: BLM = United States Bureau of Land Management; CCR = California Code of Regulations; CPUC = California Public Utilities Commission; LORS = laws, ordinances, regulations, and standards.

3.7 Geology, Soils, Topography, Mineral Resources and Seismic

This section describes the existing geology, soil conditions, and seismicity in the project area in terms of local topography, geologic substrate, soil resources, and regional seismicity. This section also identifies local geologic and seismic hazards that could potentially affect structures associated with the Imperial Valley Solar (IVS) project. Regulations, plans, and policies including Federal, State, and local laws related to geologic and seismic considerations that may be relevant for the IVS project are also discussed.

3.7.1 Topography

The IVS project would be constructed on approximately 6,500 acres (ac) south of Evan Hewes Highway and north of Interstate 8 (I-8) in Imperial County, California. The site includes approximately 6,140 ac of Federal land managed by the United States Bureau of Land Management (BLM) and approximately 360 ac of privately owned land.

The IVS project site is in the south central part of the Imperial Valley region of the Salton Trough, a topographic and structural depression within the Colorado Desert physiographic province in southern California. Tectonically, the Salton Trough appears to lie on the boundary between the western edge of the North American Plate and the eastern edge of the Pacific Plate, with relative plate motion being transferred to the regional San Andreas Fault system via at least three more localized fault zones. The Colorado Desert province is characterized by broad alluvium-filled valleys and plains and is bounded to the west by the northwest trending granitic mountains of the Peninsular Ranges physiographic province and on the east by the south part of the Mojave Desert physiographic province.

The east part of the IVS project site is primarily composed of gently sloping undisturbed desert. The west part of the site is better characterized by more rolling terrain or badlands with intermittent incised drainages. Overall, the site slopes northeast toward the regional topographic low point at the Salton Sea.

3.7.2 Geology

The IVS project site is within the Yuha Desert geomorphic subprovince of the Colorado Desert geomorphic province. The site is near the eastern shoreline of ancient Lake Cahuilla.

The subsurface stratigraphy in the project area is generally characterized by Holocene alluvium and colluvium deposits which overlie Holocene lakebed deposits. These in turn overlie Late Pleistocene to Holocene older alluvium deposits which are underlain by the Pleistocene to Pliocene Palm Springs Formation.

The surficial alluvium and colluvium deposits are composed of primarily locally derived silty and clayey sands or poorly graded sand with silt or clay and are commonly 2 to 7 feet (ft) thick. These overlie sediments of ancient Lake Cahuilla which are similar in composition. The lacustrine sediments of Lake Cahuilla vary between approximately 100 to 300 ft thick where the ancient lake was deepest and are probably much thinner in the IVS project area. Lake Cahuilla sediments are generally underlain by Late Miocene to Latest Pleistocene marine and non-marine sandstones and mudstones of the Palm Springs Formation which can be more than 15,000 ft thick. Alluvium, colluvium, and lacustrine deposits are thicker in the eastern, gently sloping part of the project area and thinner in the western part where tectonic forces have uplifted Palm Springs Formation deposits to the surface where they form incised badland topography.

3.7.3 Mineral Resources

The IVS project site is not located within an established Mineral Resource Zone (MRZ) and no economically viable mineral deposits are known to be present within the site boundary. There is a major sand and gravel quarry approximately 4 miles (mi) north of the town of Ocotillo and 10 mi northwest of the west boundary of the IVS project site. These aggregate deposits occur in young alluvial fans and active washes along the southern flank of the Coyote Mountains. There is no similar geological environment on or in the immediate vicinity of the IVS project site boundary where similar sand and gravel deposits might reasonably be expected.

3.7.4 Applicable Regulations, Plans, and Policies

Geologic resources and geotechnical hazards are governed primarily by local jurisdictions. The conservation elements and seismic safety elements of city and county general plans contain policies for the protection of geologic features and avoidance of hazards, but do not specifically address solar energy or transmission line construction projects. Statutes, regulations, and policies related to geologic resources and geotechnical hazards relevant or potentially relevant to the IVS project are discussed in the following sections.

3.7.4.1 Federal

Uniform Building Code

Published by the International Conference of Building Officials, the UBC provides complete regulations covering all major aspects of building design and construction relating to fire and life safety and structural safety. This is the code adopted by most western states. The provisions of the 1997 UBC, Volume 1, contain the administrative, fire and life-safety, and field inspection provisions, including all nonstructural provisions and those structural provisions necessary for field inspections. Volume 2 contains provisions for structural engineering design, including those design provisions formerly in the UBC Standards. Volume 3 contains the remaining material, testing and installation standards previously published in the UBC Standards.

3.7.4.2 State

Alquist-Priolo Earthquake Fault Zone

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (formerly the Special Studies Zoning Act) regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While this Act does not specifically regulate overhead transmission lines or solar projects, it does help define areas where fault rupture is most likely to occur. This Act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be "sufficiently active" and "well defined" by detailed site-specific geologic explorations in order to determine whether building setbacks from those fault zones should be established.

Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 (Public Resources Code, Chapter 7.8, Division 2) directs the California Department of Conservation (DOC), Division of Mines and Geology (DMG) [now called California Geological Survey (CGS)] 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. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by the CGS in their land use planning and permitting processes. The Act requires that site-specific geotechnical

investigations be performed prior to permitting most urban development projects within designated seismic hazard zones.

California Building Code

The California Building Code (CBC, 2001) is based on the 1997 UBC, 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. Because the IVS project transmission line is in UBC Seismic Zone 3, provisions for the design of that feature should follow the requirements of Chapter 16.

3.7.4.3 Local

The Seismic and Public Safety Element of the County of Imperial (County) General Plan contains requirements for the avoidance of geologic hazards and/or the protection of unique geologic features. More specifically, Section 5.3.5.3 of the County's Seismic and Safety Element requires utilities that cross active faults to prepare an operations plan.

3.7.5 Existing Geologic Setting and Geologic Hazards

3.7.5.1 Seismic Ground Shaking

Ground shaking (earthquakes) represents the main geological hazard at this site. Type A and B faults within 80 mi of the IVS project site are listed in Table 3-13. Type A faults have slip-rates of greater than 5 millimeters per year (mm/year) and are capable of producing an earthquake of magnitude 7.0 or greater. Type B faults have slip-rates of 2 to 5 mm/year and are capable of producing an earthquake of magnitude 6.5 to 7.0. The fault type, potential magnitude, and distance from the site of the Types A and B faults are also summarized in Table 3-13.

Type C and otherwise undifferentiated faults which are more than 20 mi from the IVS project site are not discussed because they are unlikely to undergo movement or generate seismicity which could affect the IVS project facilities.

Table 3-13 Active Faults Relative to the Proposed Imperial Valley Solar Project Site

Fault Name	Distance From Site (miles)	Maximum Earthquake Magnitude (Mw)	Estimated Peak Site Acceleration (g)	Movement and Strike	Slip Rate (mm/yr)	Fault Type
Laguna Salada	4.1	7.0	0.334	Right-Lateral Strike Slip (Northwest)	3.5	A
Elsinore (Coyote Mountains)	9.3	6.8	0.187	Right-Lateral Strike Slip (Northwest)	4.0	A
Superstition Mountain (San Jacinto)	10.8	6.6	0.151	Right-Lateral Strike Slip (Northwest)	5.0	A
Superstition Hills (San Jacinto)	13.4	6.6	0.129	Right-Lateral Strike Slip (Northwest)	4.0	A
Elmore Ranch	17.5	6.6	0.106	Left-Lateral Strike Slip (Northwest)	1.0	B
San Jacinto – Borrego	17.8	6.6	0.105	Right-Lateral Strike Slip (Northwest)	4.0	A
Imperial	18.8	7.0	0.124	Right-Lateral Strike Slip (Northwest)	20.0	A
Brawley Seismic Zone	23.4	6.4	0.077	Right-Lateral Strike Slip (Northwest)	25.0	B
Elsinore (Julian)	32.6	7.1	0.086	Right-Lateral Strike Slip (Northwest)	5.0	A
San Jacinto – Coyote Creek	35.5	6.6	0.062	Right-Lateral Strike Slip (Northwest)	4.0	A
San Jacinto – Anza	37.2	7.2	0.082	Right-Lateral Strike Slip (Northwest)	12.0	A
Earthquake Valley	38.7	6.5	0.055	Right-Lateral Strike Slip (Northwest)	2.0	B
San Andreas – SB – Coachella	40.4	7.7	0.100	Right-Lateral Strike Slip (Northwest)	24.0	A

Fault Name	Distance From Site (miles)	Maximum Earthquake Magnitude (Mw)	Estimated Peak Site Acceleration (g)	Movement and Strike	Slip Rate (mm/yr)	Fault Type
San Andreas - Coachella	40.4	7.7	0.100	Right-Lateral Strike Slip (Northwest)	25.0	A
San Andreas – Whole	40.4	8.0	0.117	Right-Lateral Strike Slip (Northwest)	34.0	A
Rose Canyon	76.6	7.2	0.047	Right-Lateral Strike Slip (Northwest)	1.5	B
Elsinore (Temecula)	79.4	6.8	0.037	Right-Lateral Strike Slip (Northwest)	5.0	A

Table Key: Mw = maximum moment magnitude; g = acceleration due to gravity; mm/yr = millimeters per year.

Seventeen Type A and B faults and fault segments were identified within 80 mi of the IVS project site as shown in Table 3-13. In addition, the Yuha Wells and Dixieland faults are in proximity to the IVS project site. The Yuha Wells fault is a zone of reticulated strands between the Laguna Salada fault southeast of the IVS project site and the Elsinore fault northwest of the IVS project site. The Yuha Wells fault passes through the west part of the IVS project site. Age, magnitude, and recurrence intervals of movement along the Yuha Wells fault are not well constrained but there is evidence of Quaternary movement and possible left-lateral offset of Holocene stream channels within the fault zone.

The Dixieland fault trends southeast to northwest and crosses Evan Hewes Highway east of the IVS project site. The east end of the IVS project water transmission line crosses the Dixieland fault. Surface deformation in the form of ground cracking and subsidence was first noted in 1969 and an approximately 200 ft wide by 700 ft long zone of eroded fissures and sinkholes was noted in 1973. Deformation associated with the Dixieland fault may have resulted from a seismic response to the magnitude 6.4 Borrego Mountain earthquake on the Coyote Creek segment of the San Jacinto fault on April 9, 1968.

Based on previous drilling and the soil profile generated for this site during the IVS project geotechnical investigation, the site soil class is assumed to be seismic Class D. The estimated peak horizontal ground acceleration for the IVS project site is 0.74 times the acceleration of gravity (0.74g) for bedrock acceleration based on a 2 percent probability of exceedence in 50 years under 2007 CBC criteria. For a Class D site, the soils profile amplifies the acceleration of the ground surface to 1.94g.

All the faults listed in Table 3-13 could generate some level of ground shaking at the IVS project site. There is a known fault located within the project site and, therefore, there is potential for impacts to the project site from ground motion and fault rupture. Further discussion of this topic is provided in Section 4.7, Geology, Soils, Topography, Mineral Resources, and Seismic.

3.7.5.2 Liquefaction

Liquefaction is a condition in which saturated cohesionless soil may lose shear strength because of sudden increase in pore water pressure caused by an earthquake. However, the potential for liquefaction of strata deeper than approximately 40 ft below ground surface (bgs) is considered negligible due to the increased confining pressure and because geological strata at this depth are generally too compact to liquefy. The reported deep groundwater table, at greater than 50 ft bgs would indicate no potential for liquefaction. Standard penetration testing (blowcounts) reported in the IVS project geotechnical report indicates strata beneath the site are also generally too dense to liquefy. Therefore, this topic is not discussed further in this analysis.

3.7.5.3 Lateral Spreading

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope—that is, a nearby steep hillside or deeply eroded stream bank, etc.—but can also occur on gentle slopes such as are present on the IVS project site. Other factors such as distance from the earthquake epicenter, the magnitude of the seismic event, and the thickness and depth of liquefiable layers also affect the amount of lateral spreading. Because the IVS project site is not subject to liquefaction, there is no potential for lateral spreading at the site surface during seismic events. Therefore, this topic is not discussed further in this analysis.

3.7.5.4 Dynamic Compaction

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase is soil density). The decrease in volume can result in settlement of overlying structural improvements. The IVS project site specific geotechnical investigation indicates the alluvial deposits in the site subsurface are generally too dense to allow significant dynamic compaction. Therefore, this topic is not discussed further in this analysis.

3.7.5.5 Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. The IVS project site specific geotechnical investigation indicates the subsurface alluvial deposits which underlie the site are generally too dense to experience significant hydrocompaction. Therefore, this topic is not discussed further in this analysis.

3.7.5.6 Subsidence

Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation or fill loads. The IVS project site-specific geotechnical investigation indicates the alluvial deposits which underlie the site are generally at a medium-dense to very

dense consistency and, therefore, are considered unlikely to support site-wide subsidence due to foundation loading. Local subsidence is discussed further in Section 4.7.

Regional ground subsidence is typically caused by petroleum or groundwater withdrawal that increases the effective unit weight of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. No petroleum or natural gas withdrawals are occurring on or in the immediate vicinity of the IVS project site and no groundwater is proposed to be pumped at the site. Significant groundwater pumping for geothermal power production is occurring in the vicinity of Brawley, approximately 15 mi northeast of the IVS project site. However, groundwater extraction at that distance is unlikely to affect groundwater conditions beneath the IVS project site. Regional subsidence of the Salton Trough is occurring due to ongoing tectonism and possibly basin loading. However, minor settling, spread over the entirety of the Salton Trough, is unlikely to result in significant localized subsidence in the IVS project area. Therefore, regional ground subsidence is not discussed further in this analysis.

3.7.5.7 Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in place at a moisture content below their plastic limit. The addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. allows the clay minerals to absorb water molecules into their structure, which results in an increase in the overall volume of the soil. This increase in volume can cause excessive movement (heave) of overlying structural improvements. The alluvium, colluvium, and lakebed deposits which form most of the IVS project site subsurface are not considered to be expansive. However, claystone members within the Palm Springs Formation may be expansive if exposed to moisture. This topic is discussed in Section 4.7.

3.7.5.8 Landslides

The IVS project site slopes gently to the east-northeast at a gradient of less than 1 percent. Due to the low site gradient and the absence of topographically high ground on or in the immediate vicinity of the IVS project site, the potential for landslides on or near the site is considered to be negligible. The Imperial County General Plan Landslide Activity map indicates moderate potential for landslide activity in the hills west of the IVS project site but no potential for landslide activity is indicated within the boundary of the IVS project site. Therefore, this topic is not discussed further in this analysis.

3.7.5.9 Flooding

The Federal Emergency Management Agency (FEMA) has identified the majority of the IVS site and ancillary facilities areas as lying in Unshaded Zone X, or "Areas determined to be outside the 0.2 percent annual chance floodplain." However, the channels and surrounding banks of ephemeral drainages which cross the IVS project site are designated special flood hazard areas subject to inundation by the 1 percent annual chance flood. Civil engineering design can minimize the potential for flash flood damage to the IVS project. Additional discussion of flash flooding is provided in Sections 3.17 and 4.17, Hydrology, Water Use and Water Quality.

3.7.5.10 Tsunamis and Seiches

The IVS project site and the associated linear facilities are not located near any substantial surface water bodies and, therefore, are not at risk for potential effects due to tsunamis and seiches. Therefore, this topic is not discussed further in this analysis.

3.7.5.11 Volcanic Hazards

The IVS project site is approximately 30 mi southwest of the Salton Buttes volcanic vent area. The Salton Buttes are an area of explosive and extrusive rhyolitic eruptions which occurred approximately 16,000 years ago. Although no recurrence interval has been determined, the Salton Buttes is an area of active crustal spreading which makes it conducive to further eruptive activity in the future. This topic is discussed further in Section 4.7.

3.8 Grazing, and Wild Horses and Burros

3.8.1 Setting and Existing Conditions

The site proposed for the Imperial Valley Solar (IVS) project covers approximately 6,500 acres (ac) in southwest Imperial County. The site consists of an estimated 6,140 ac of public land administered by the United States Bureau of Land Management (BLM), and approximately 360 ac of private land under the jurisdiction of Imperial County. The analysis in this Final Environmental Impact Statement (FEIS) focuses on the 6,140 ac under the jurisdiction of the BLM because that is the area subject to the BLM right-of-way (ROW) grant application and the amendment to the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended). The approximately 360 ac on the project site that are in private ownership are not within the jurisdiction of the BLM and would not be included in the ROW grant or the CDCA Plan amendment. Therefore, impacts and issues related to those privately-owned 360 ac are not considered in this FEIS.

The northern boundary of the IVS project site is adjacent to Imperial County Route S80 (Route S80) and Plaster City, and the southern boundary is adjacent to Interstate 8 (I-8).

The IVS project site generally consists of Sonoran creosote bush scrub habitat with several seasonal drainages and undulating topography. The site currently consists of undeveloped desert land and much of the site is available for outdoor recreation uses. Two private parcels of land, one owned by a recreational vehicle club and one by a private landowner, are surrounded by the project site. These parcels are not a part of the project. Access to those parcels would be provided via the arterial road system within the project site.

3.8.1.1 Grazing (Rangelands)

The Taylor Grazing Act (TGA) authorizes the United States Secretary of the Interior to allow grazing on public lands and other lands administered by the BLM through issuing grazing permits or leases to qualified applicants (43 United States Code [USC] Sections 315 and 315a). BLM regulations implementing the TGA are codified at 43 Code of Federal Regulations (CFR) Part 4100. Those regulations establish a three-step process for modifying a grazing permit or lease. The BLM must undertake "…consultation, cooperation, and coordination…" with affected permittees or lessees, States, and the interested public, and provide these groups, to the extent practical, an opportunity to review, comment, and give input during the preparation of reports

that evaluate data used as a basis for making permit modification decisions (43 CFR Section 4130.3-3).

Grazing range allotments are designated BLM allotments or pastures for wildlife and livestock. There are currently no BLM rangeland allotments in Imperial County. Prior to the adoption of the *Eastern San Diego Resource Management Plan* (Eastern San Diego RMP) in 2008, there were BLM-administered rangelands in San Diego County throughout the areas between the Cleveland National Forest (CNF), Cuyamaca Rancho State Park, and Anza-Borrego Desert State Park. However, under Section 2.13.2 of the Eastern San Diego RMP, grazing on all those allotments was eliminated with the exception of vegetation management prescriptions. Therefore, there are no longer any range lands supporting BLM grazing allotments on BLM administered lands, including the project site.

There are a number of United States Forest Service (USFS) range allotments in the CNF, but they are approximately 31 miles (mi) west of the project site.

The CDCA Plan identifies three types of potential ranges:

- **Perennial:** This range type is normally found 3,500 feet (ft) above mean sea level (amsl) and has woody shrubs and bunch grasses available for forage.
- **Ephemeral:** This range type occurs below 3,500 ft amsl and has annual forbs and grasses available for grazing.
- **Ephemeral/Perennial:** This range type is a combination of the perennial and ephemeral range types.

The IVS project site does not possess the forage characteristics of any of these range types.

3.8.1.2 Wild Horses and Burros

BLM manages wild horses and burros on land under its jurisdiction as guided by the Wild Free-Roaming Horses and Burros Act of 1971. Those activities include the management of Herd Areas (HA) and Herd Management Areas (HMAs; subareas of HAs), which are geographic areas where wild horse or burro populations were found when the Act was passed in 1971. There are 33 designated HAs and 22 designated HMAs on BLM lands in California. According to BLM maps, the Chocolate-Mule Mountains HMA and the Picacho HA are approximately 58 mi east of the IVS project site in Imperial County near the California-Arizona border. There are no designated HAs or HMAs on, adjacent to, or in the immediate vicinity of the project site.

BLM estimates that nearly 37,000 wild horses and burros (approximately 33,100 horses and 3,800 burros) roam on BLM-managed rangelands in 10 western states as of February 2009. BLM manages wild horses and burros in HMAs that comprise 31,900,000 ac in those states. Approximately 26,600,000 ac of the total 31,900,000 ac are under BLM management.[1] The goal of the Wild Horse and Burro Element in the CDCA Plan is to reduce conflict where high resource values occur and to intensively manage wild horses and burros in areas where low or moderate conflicts with other resources occur. This management policy is also administered through HAs and HMAs.

3.8.2 Laws, Ordinances, Regulations and Standards

3.8.2.1 Grazing (Rangelands)

The Public Rangelands Improvement Act of 1978 (PRIA) established and reaffirmed the national policy and commitment to:

- Inventory and identify current public rangeland conditions and trends;
- Manage, maintain, and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; and
- Continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros that pose a threat to themselves, their habitat, and to other rangeland values.

The CDCA Plan Livestock Grazing Element provides the following management goals for this resource:

(1) Use range management to maintain or improve vegetation to meet livestock needs and to meet other management objectives set forth in the CDCA Plan.

(2) Continue using the California desert for livestock production to contribute to satisfying the need for food and fiber from public land.

[1] http://www.blm.gov/wo/st/en/prog/wild_horse_and_burro.html.

(3) Maintain good and excellent range condition and improve poor and fair range condition by one condition class, through development and implementation of feasible grazing systems or Allotment Management Plans (AMPs). Adjust livestock use where monitoring data indicate changes are necessary to meet resource objectives.

3.8.2.2 Wild Horses and Burros

As noted above, the BLM protects, manages, and controls wild horses and burros under the authority of the Wild Free-Roaming Horses and Burros Act of 1971 to ensure that healthy herds thrive on healthy rangelands. BLM manages these animals as part of its multiple-use mission under the Federal Land Policy and Management Act of 1976 (FLPMA). One of BLM's key responsibilities under the Wild Free-Roaming Horses and Burros Act is to determine the appropriate management level (AML) of wild horses and burros on public rangelands.

The Wild Horse and Burro Element in the CDCA Plan focuses on reducing conflict where high resource values occur and intensively managing wild horses and burros in areas where low or moderate conflicts with other resources occur. Specifically, the Wild Horse and Burro Element provides the following management goals for these resources:

- Provide year-long feed, cover, and water requirement for wild horses and burros within specified areas. Feed and water requirements will be satisfied by reserving and developing sufficient forage and water to maintain biological demands for a specific number of animals. Cover or living area will be provided and preserved through HMA Plans.

- Protect wild horses and burros on public lands by conducting surveillance to prevent unauthorized removal or undue harassment of animals.

Remove all wild horses and burros from areas not designated for retention. Remove excess wild horses and burros from designated retention areas.

3.9 Land Use and Corridor Analysis

3.9.1 Setting and Existing Conditions

The site proposed for the Imperial Valley Solar (IVS) project is approximately 6,500 acres (ac) in the southwest part of Imperial County. The site consists of an estimated 6,140 ac of public land administered by the United State Bureau of Land Management (BLM), and approximately 360 ac of private land under the jurisdiction of Imperial County. The analysis in this Final Environmental Impact Statement (FEIS) focuses on the 6,140 ac under the jurisdiction of the BLM as that is the area subject to the BLM right-of-way (ROW) grant application and amendment to the *California Desert Conservation Area (CDCA) Plan* (BLM, 1980, as amended). The approximately 360 ac in private ownership are not within the jurisdiction of the BLM and would not be included in the ROW grant or the CDCA Plan amendment.

The northern boundary of the IVS project site is adjacent to Imperial County Route S80 and Plaster City, and the southern boundary is adjacent to Interstate 8 (I-8).

The IVS project site currently consists of undeveloped desert land available for outdoor recreational uses. Two private parcels of land, one owned by a recreational vehicle club and one by a private landowner, are surrounded by the IVS project site. These parcels are not a part of the IVS project. Access to these parcels of land would be provided via the arterial road system within the IVS project site. The west boundary of the IVS project site is within the Imperial County Ocotillo/Nomirage Planning Area.

The area surrounding the IVS project site consists of undeveloped desert land with small rural communities in the vicinity. Immediately adjacent to the north boundary of the IVS project site is the US Corporation Gypsum Wallboard Manufacturing Facility, known as Plaster City. The Plaster City Off-Highway Vehicle (OHV) Open Area includes two open areas, Plaster City East and Plaster City West, which are popular primitive camping and day use areas. Adjacent to the south boundary of the IVS project site is the Yuha Desert Area of Critical Environmental Concern (ACEC) which is under BLM jurisdiction. Sections 3.14 and 4.14, Special Designations, provide further discussion regarding that ACEC.

The IVS project site is located within 2 related utility corridors: Corridor “N” and the Section 368 Energy Corridor. Corridor “N” in this area is approximately 3 miles wide with a centerline that generally follows the alignment of I-8. The Section 368 Corridor is approximately 2 miles wide and generally follows the route of the existing high voltage transmission line from the southeast

to the southwest, trending more westerly along the north side of I-8, and then paralleling along the north side of the "N" corridor as it trends westward.

As part of its review of the applicant's ROW application, the BLM's California Desert District Office identified that the project lies largely within an existing designated Utility Corridor "N" Section 368 115-238 (CDCA N, 368 115-238). In general, about 60 percent of the IVS project site occupies the northern half of Utility Corridor "N", while most of the Phase II part of the IVS project (on the eastern part of the IVS project site occupies the Section 368 corridor.

In addition, there are 8 authorized rights-of-ways are within or abutting the IVS project site, accommodating uses including road, railroads, and utilities.

The community of Edgar is approximately 0.5 mile (mi) east of the IVS project site. The Imperial Lakes Specific Plan area is the nearest residential development to the site, approximately 0.7 mi. northeast of the site. The communities of Coyote Wells and Ocotillo are approximately 1.3 and 2.9 mi west of the nearest boundary of the IVS project site, respectively.

The *Western Colorado Desert Routes of Travel Designations* (WECO) is an amendment to the CDCA Plan. In the WECO amendment, 10 Open Routes are within the IVS project site and construction laydown site, and 2 Open Routes are designated in the vicinity of the IVS project site and construction laydown site.

The land uses on and around the IVS project site are summarized in Table 3-14.

3.9.2 California Desert Conservation Area Plan Land Use Plan and Other Laws, Ordinances, Regulations and Standards

In this general area, the majority of the land in Imperial County is designated as "Recreation/Open Space" according to its General Plan Land Use Element Map, with the exception of the "Industry" designation for Plaster City north of the IVS project site. The recreation and open space areas under BLM management are designated as open or limited use. In open areas, all forms of cross-country travel are permitted within the posted boundaries, and in limited use areas vehicle travel is limited to approved/signed routes of travel and no cross-country vehicle travel is allowed.

Table 3-15 provides a general description of the land use laws, ordinances, regulations, and standards (LORS) applicable to the IVS project and surrounding lands. For the discussion on special designations (e.g., farmlands), refer to Section 3.14.

Table 3-14 Open Space and Recreation Areas

Open Space/ Recreation Area	Jurisdiction/ Administration	Approximate Distance from the IVS Project Site	Approximate Acreage	Allowed Uses
Recreational Vehicle Club	Open Space/ Imperial County	Private parcel surrounded by the IVS project site	640	OHV
Yuha Desert Recreation Lands	Limited Area/ BLM; ACEC	Project site is within the boundaries of this desig-nation (Table Note 1)	+175,000	OHV, camping
Plaster City OHV Open Area	Open Area/ BLM	500 feet north	41,000	OHV, camping
Superstition Mountain	Open Area/ BLM	10 miles north	13,000	OHV, camping
Anza-Borrego Desert State Park	CSP	10 miles west	+600,000	Camping, hiking, natural exhibits
Lark Canyon OHV Area and Campground	Limited Use Area/ BLM	20 miles west	N/A	OHV, camping
Ocotillo Wells State Vehicular Recreation Area	CSP	23 miles north	+80,000	OHV, camping
Heber Dunes State Recreation Area	CSP	24 miles east	343	OHV, camping
East Mesa	Limited Use Area/ BLM	32 miles east	N/A	OHV, camping
Imperial Sand Dunes Recreation Area	Open Area BLM	35 miles east	118,000	OHV, camping

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Note 1: According to the comments provided by the BLM on a draft of the SA/DEIS, the project site is within the Yuha Desert Recreation Lands.

Table Key: ACEC = Area of Critical Environmental Concern; BLM = Bureau of Land Management; CSP = California State Parks; N/A = Not Available; OHV = off-highway vehicle; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement.

Table 3-15 Land Use Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
FLPMA, 1976 – 43 CFR 1600	Establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the IVS project is that Title V, Section 501 establishes BLM's authority to grant rights-of-way for generation, transmission, and distribution of electrical energy (FLPMA 2001).
BLM – CDCA Plan, 1980, as amended	The 25-million-acre CDCA Plan area contains over 12 million acres of public lands spread within the area known as the California Desert, which includes three deserts: the Mojave, the Sonoran, and a small portion of the Great Basin. The 12 million acres of public lands administered by the BLM are half of the CDCA. The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each of the plan elements provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.
BLM – WECO Amendment to the CDCA Plan, 2002	Regulations, Executive Orders, and the CDCA Plan require the BLM to designate routes of travel as being open, limited or closed to vehicular travel and to assure that resources are properly managed in a multiple use context. During the mid-1980s and 1990s, BLM staff in the El Centro Resource Area identified and designated many routes of travel in the WECO amendment planning area. The 2002 WECO amendment clarified, updated, and assigned designations to all routes within the WECO amendment area.
Yuha Desert Management Plan, 1985	The BLM Yuha Desert Management Plan establishes goals and planned actions that are designed to meet the goals of the CDCA Plan. They emphasize the protection of wildlife and cultural resource values while permitting a compatible level of competitive vehicle use and energy development.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: BLM = United States Bureau of Land Management; CDCA = California Desert Conservation Area; CFR = Code of Federal Regulations; FLPMA = Federal Land Policy and Management Act; IVS = Imperial Valley Solar; WECO = Western Colorado Desert Routes of Travel Designations.

3.10 Noise and Vibration

The Imperial Valley Solar (IVS) project is proposed on an approximately 6,500 acre (ac) site 4 miles (mi) east of the town of Ocotillo in Imperial County. The site is primarily on undisturbed Federal land managed by the United States Bureau of Land Management (BLM).

The ambient noise sources in the vicinity of the IVS project site consist of aircraft traffic, highway traffic, wind, and wildlife. The nearest sensitive receptor is a small group of residences approximately 0.6 mi west of the northwest boundary of the IVS project site. There are additional sensitive receptors southwest and northeast of the IVS project site boundaries at greater distances from the site.

3.10.1 Ambient Noise Monitoring

To establish a baseline for comparison of predicted project noise to existing ambient noise, an ambient noise survey was conducted on January 29, 30 and 31, 2008. That survey monitored existing noise levels at the following locations:

(1) **Measuring Location 1 (ML1):** Near a residence approximately 5,300 feet (ft) southwest of the IVS project site, at 426 Evan Hewes Highway. This represents the sensitive receptor most likely to be impacted by project-related noise. Long-term (24-hour) monitoring showed ambient noise levels at this receptor typical of a desert environment.

(2) **Measuring Location 2 (ML2):** Near the western boundary of the IVS project site, approximately 4,300 ft from the nearest sensitive residential receptors at 1516 Painted Gorge Road.

(3) **Measuring Location 5 (ML5):** Near a residential community approximately 10,500 ft northeast of the IVS project site.

Ambient noise measurements were not taken at the nearest sensitive receptors, a group of five mobile residences approximately 3,300 ft from the western boundary of the IVS project site, at 1516 Painted Gorge Road. Ambient noise was not measured at those locations because, on the basis of comparable noise conditions such as noise source proximity and exposure, the ambient noise at these nearest receptors was assumed to be similar to levels at ML1. Given the similarities between the noise environments at the receptors at Painted Gorge Road and ML1, and that the long-term measurements at ML2 were considerably higher than those at ML1 (66

dBA L_{eq} at ML2 compared to 49 dBA L_{eq} at ML1); the more conservative measurements from ML1 are an appropriate proxy for these nearer sensitive receptors. This grouping of sensitive receptors is referred to as "Painted Gorge" in this analysis.

Table 3-16 summarizes the ambient noise measurements at these four locations.

Table 3-16 Summary of Measured Ambient Noise Levels

Measurement Location	Measured Noise Levels Daytime (dBA L_{eq})	Measured Noise Levels Nighttime (dBA L_{eq})	Measured Noise Levels Nighttime (dBA L_{90})
ML1: Southwest Residence	49	42	38
ML2: West Project Boundary	66	72	72
Painted Gorge Residences	49	42	38
ML5: Northeast Residence	56	52	48

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: dBA L_{eq} = equivalent continuous sound level measured in A-weighted decibels.

3.10.2 Applicable Regulations, Plans, and Policies/Management Goals

Table 3-17 summarizes applicable noise laws, ordinances, regulations, and standards (LORS).

Table 3-17 Noise and Vibration Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Occupational and Health Safety Act (OSH Act) of 1970: 29 United States Code Section 651 et seq.	Protects workers from the effects of occupational noise exposure.
State (Cal-OSHA)	
California Code Regulations Title 8, Section 5095–5099	Protects workers from the effects of occupational noise exposure.
Local	
Imperial County General Plan - Noise Element	Establishes acceptable noise levels and limits hours of construction.
Imperial County Noise Ordinance	Establishes acceptable noise levels.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: Cal-OSHA = California Occupational Safety and Health Administration.

3.10.2.1 Federal

Under the Occupational Safety and Health Act of 1970 (29 USC Section 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR Section 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. NOISE Appendix A (Table A4) in the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) shows the OSHA Worker Noise Exposure Standards. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

There are no Federal laws governing off-site (community) noise.

The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of ground-borne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess ground-borne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the threshold of perception is 65 Velocity decibels (VdB), which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

3.10.2.2 State

California Government Code Section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are provided on Figure 3-3.

The California Occupational Safety and Health Administration (Cal-OSHA) has promulgated Occupational Noise Exposure Regulations (California Code of Regulations, Title 8, Section 5095–5099) that set employee noise exposure limits. These standards are equivalent to the Federal OSHA standards.

3.10.2.3 Local

Imperial County General Plan Noise Element

The County's General Plan Noise Element sets standards for the control of noise. The Noise Element defines sensitive receptors to include residences, schools, hospitals, parks and office buildings. It further states that riparian bird species may also be considered sensitive receptors. Imperial County has adopted the State of California land use compatibility guidelines in the General Plan (see Figure 3-3). The noise levels considered generally acceptable and conditionally acceptable for single-family residences are 60 dB Community Noise Equivalent Level (CNEL) and 70 dB CNEL, respectively.

The objectives of the Noise Element include controlling noise at the source where feasible. The Noise Element also sets property line noise limits for sensitive receptors. These limits are summarized in Table 3-18.

Table 3-18 Imperial County General Plan Property Line Noise Limits

Zone	Time	1-Hour Average Sound Level, dB
Residential	7 a.m. to 10 p.m.	50
Residential	10 p.m. to 7 a.m.	45
Multi-Residential	7 a.m. to 10 p.m.	55
Multi-Residential	10 p.m. to 7 a.m.	50
Commercial	7 a.m. to 10 p.m.	60
Commercial	10 p.m. to 7 a.m.	55
Light Industrial and Industrial Park	Anytime	70
General Industrial	Anytime	75

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: dB = decibels.

The Noise Element further states that construction noise shall not exceed 75 dB Leq at the nearest sensitive receptor and requires that construction equipment operation be limited to the following hours:

- Monday through Friday.....7 a.m. to 7 p.m.
- Saturday.....9 a.m. to 5 p.m.
- Sunday and Holidays.....Not allowed

If the noise level at a receptor during project operations is within the normally acceptable range of the Noise/Land Use Compatibility Guidelines on Figure 3-3, and the project has increased

noise levels 3 dB CNEL or more, then the project is deemed to have created a potentially significant noise impact, and mitigation measures must be considered.

The Noise Element allows the institution of required noise reduction measures either at the source of the noise, along the path of the noise from source to receptor, or at the receptor. Preference is given to reduction at the source or along the path, but in certain cases, such as when there is only one receptor, reduction at the receptor is recognized as most cost effective, and therefore acceptable.

Imperial County Noise Ordinance

The County's Noise Ordinance establishes sound level limits identical to the property line noise limits in the Imperial County General Plan, as summarized in Table 3-18.

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3.11 Public Health and Safety, and Hazardous Materials

3.11.1 Public Health and Safety

3.11.1.1 Overview of Public Health and Safety

This section describes the existing environment on and in the vicinity of the Imperial Valley Solar (IVS) project site from the public health perspective. Characteristics of the natural environment, such as meteorology and terrain, may affect the potential of the IVS project to cause impacts on public health. For example, an emissions plume from a facility may affect elevated areas before lower terrain areas due to a reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts. Also, the types of land uses near a site influence the surrounding population distribution and density, which, in turn, can affect public exposure to project emissions. Additional factors affecting potential public health impacts include existing air quality, existing health concerns, and environmental site contamination.

3.11.1.2 Site and Vicinity Description

The IVS project site is in Imperial County between Plaster City and Interstate 8 (I-8), on lands managed by the United States Bureau of Land Management (BLM) or by Imperial County. Land uses in the vicinity of the project site include industrial, recreational, residential, and agricultural uses. The nearest sensitive receptors are approximately 3,300 feet (ft) from the west boundary of the project site. There is a residence approximately 5,300 ft southwest of the IVS project site.

The topography on and in the vicinity of the IVS project site is generally flat or slightly sloping. There is elevated terrain north, east, and west of the project site where several mountain ranges rise to elevations ranging from 600 to 4,800 ft above mean sea level (amsl). However, the nearest elevated terrain is about 7 mi west of the IVS project site.

3.11.1.3 Meteorology

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into the air as well as the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants and associated

health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced, and localized exposure may be increased.

Imperial County is characterized by a desert climate; summers are hot and dry, winters are moderate with low precipitation, and temperature inversions are strong. Winds generally flow from the west and southwest across the region.

Atmospheric stability is a measure related to turbulence, or the ability of the atmosphere to disperse pollutants due to convective air movement. Mixing heights (defined as the height above ground level through which the air is well mixed and in which pollutants can be dispersed) are lower during mornings due to temperature inversions and increase during the warmer afternoons. Additional information on the existing meteorological conditions in the vicinity of the IVS project site is provided in Section 3.2, Air Quality.

3.11.1.4 Existing Air Quality

The IVS project site is within the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD). By examining average concentration levels of toxic air contaminants from representative air monitoring sites with cancer risk factors specific to each contaminant, lifetime cancer risks can be calculated to provide a background risk level for inhalation of ambient air. For comparison purposes, it should be noted that the overall lifetime cancer risk for the average individual in the United States is about 1 in 3, or 333,000 in 1 million.

The ICAPCD operates several air quality monitoring stations. The closest is the El Centro 9th Street Station about 14 mi east of the IVS project site. Data from that monitoring station shows that the annual arithmetic mean for particulate matter greater than ten microns in diameter (PM_{10}) ranged between 34 and 44 µg/m3 during 2005 and 2006, and that the annual arithmetic mean for particulate matter greater than 2.5 microns in diameter ($PM_{2.5}$) ranged between 8.5 and 9.7 $\mu g/m^3$ during 2004 to 2007.

The next closest air quality monitoring station is the Calexico Monitoring Station approximately 22 mi southeast of the IVS project site. Data from that monitoring site was used by the California Air Resources Board to calculate the total background cancer risk for the region. That risk was found to be 135 in one million.

The use of reformulated gasoline, beginning in the second quarter of 1996, as well as other toxics reduction measures, have led to a decrease of ambient levels of toxics and associated cancer risk during the past few years in all areas of the state and the nation. For example, in the San Francisco Bay Area, the cancer risk was 342 in 1 million based on 1992 data, 315 in

1 million based on 1994 data, and 303 in 1 million based on 1995 data. In 2002, the most recent year for which data is available, the average inhalation cancer risk decreased to 162 in 1 million.

3.11.1.5 Existing Public Health Concerns

When evaluating a new project, a detailed study and analysis of existing public health issues in the project vicinity is often conducted. That type of analysis is prepared to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population near the site for the proposed project. Assessing existing health concerns in the IVS project area will provide a basis on which to evaluate any additional health impacts from the IVS project and evaluate any proposed mitigation. Because of the very low population in the immediate vicinity of the IVS project site and because no existing health issues within a 6 mi radius of the IVS project site have been identified, an analysis of existing public health issues was not conducted.

3.11.1.6 Laws, Ordinances, Regulations, and Standards

The public health and safety related laws, ordinances, regulations, and standards (LORS) applicable to the IVS project are listed in Table 3-19.

3.11.2 Hazardous Materials

3.11.3 Overview of Hazardous Materials

Several characteristics of an area in which a project site is located may affect the potential impacts of a project related to an accidental release of a hazardous material. As described in the following sections, these are:

- Local meteorology;
- Terrain characteristics; and
- Location of population centers and sensitive receptors relative to the project.

Table 3-19 Public Health and Safety Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Clean Air Act section 112 (Title 42, USC Section 7412)	This act requires new sources that emit more than 10 tons per year of any specified HAP or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.
State	
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	These sections establish thresholds of exposure to carcinogenic substances above which Prop 65 exposure warnings are required.
California Health and Safety Code section 41700	This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California PRC Section 25523(a); Title 20 CCR Section 1752.5, 2300–2309 and Division 2 Chapter 5, Article 1, Appendix B, Part (1); California Clean Air Act, Health and Safety Code Section 39650 et seq.	These regulations require a quantitative health risk assessment for new or modified sources, including power plants that emit one or more TACs.
Local	
ICAPCD Rule 216	Requires use of T-BACT for major sources.
ICAPCD Rule 309	Requires annual fees for the Air Toxic Hot Spots (AB 2588).
ICAPCD Rule 407	States that no source shall cause injury, detriment, nuisance or annoyance to the public, which could endanger their comfort, repose, health and safety, or property.
ICAPCD Rule 1002	California Airborne Toxic Control Measures.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: AB = Assembly Bill; CCR = California Code of Regulations; HAP = Hazardous Air Pollutant; ICAPCD = Imperial County Air Pollution Control District; PRC = Public Resources Code; TACs = toxic air contaminants; T-BACT = best available control technology for toxics; USC = United States Code.

3.11.3.1 Meteorological Conditions

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as their health risks. When wind speeds are low and the atmosphere is stable, dispersion is severely reduced and can lead to increased localized public exposure.

Recorded wind speeds, ambient air temperatures, and terrain characteristics in the IVS project area are described detail in Section 3.2, Air Quality.

3.11.3.2 Terrain Characteristics

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume from an accidental release may impact high elevations before it impacts lower elevations. The topography of the IVS project site and the immediately surrounding area is essentially flat with only minor changes in topographic relief across the area.

3.11.3.3 Locations of Exposed Populations and Sensitive Receptors

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants than other groups in the population. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the locations of the population in the area surrounding a project site may have a large bearing on health risk. There are no sensitive receptors on or immediately adjacent to the IVS project site. The nearest residence to the IVS project is more than a 1 mi from the site boundary.

3.11.3.4 Laws, Ordinances, Regulations, and Standards

The Federal, state, and local laws and policies applicable to the protection of public health and hazardous materials are listed in Table 3-20.

Table 3-20 Hazardous Materials Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC Section 9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
CAA of 1990 (42 USC 7401 et seq. as amended)	Establishes a nationwide emergency planning and response program, and imposes reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
CAA Section on Risk Management Plans (42 USC Section 112(r))	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. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, Section 25531 et seq.

Applicable Law	Description
49 CFR 172.800	Requires that the suppliers of hazardous materials prepare and implement security plans in accordance with DOT regulations.
49 CFR Part 1572, Subparts A and B	Requires that suppliers of hazardous materials ensure that their hazardous material drivers comply with personnel background security checks.
CWA (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written SPCC plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49 CFR Part 190	Outlines gas pipeline safety program procedures.
Title 49 CFR Part 191	Addresses the transportation of natural and other gases by pipeline. Requires preparation of annual reports, incident reports, and safety-related condition reports. Also requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and submit a follow-up written report within 30 days.
Title 49 CFR Part 192	Addresses transportation of natural and other gases by pipeline: Requires minimum Federal safety standards, specifies minimum safety requirements for pipelines, and includes material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction, which must be followed for Class 2 and Class 3 pipelines, and requirements for preparing a pipeline integrity management program.
6 CFR Part 27	The CFATS regulation of the DHS requires facilities that use or store certain hazardous materials to submit information to the DHS so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
California Health and Safety Code, Section 25531 to 25543.4	The Cal-ARP requires the preparation of a RMP and OCA and submittal to the local CUPA for approval.
Title 8 CCR Section 5189	Requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. While these requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.
Title 8 CCR Section 5189	Sets forth requirements for design, construction, and operation of the vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes including the ASME Pressure Vessel Code, ANSI K61.1, and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.

Applicable Law	Description
California Health and Safety Code, Section 41700	Requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
Local	
ICDTSC	The ICDTSC acts as the CUPA, and is responsible for reviewing Hazardous Materials Business Plans.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: ANSI = American National Standards Institute; ASME = American Society for Material Engineering; CAA = Clean Air Act; Cal-ARP = California Accidental Release Program; CCR = California Code of Regulations; CFATS = Chemical Facility Anti-Terrorism Standard; CFR = Code of Federal Regulations; CUPA = Certified Unified Program Authority; CWA = Clean Water Act; DHS = United States Department of Homeland Security; DOT = United States Department of Transportation; ICDTSC = Imperial County Department of Toxic Substances Control; OCA = Off-site Consequence Analysis; RMP = Risk Management Plan; SPCC = spill prevention, control, and countermeasures; USC = United States Code.

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3.12 Recreation

3.12.1 Setting and Existing Conditions

The site proposed for the Imperial Valley Solar (IVS) project is approximately 6,500 acres (ac) in southwest Imperial County, California. The site consists of an estimated 6,140 ac of public land administered by the United States Bureau of Land Management (BLM), and approximately 360 ac of private land under the jurisdiction of Imperial County. The analysis in this Final Environmental Impact Statement (FEIS) focuses on the 6,140 ac under the jurisdiction of the BLM as that is the area subject to the BLM potential right-of-way (ROW) grant and amendment to the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended). The approximately 360 ac in private ownership are not within the jurisdiction of the BLM and would not be included in the right-of-way grant or the CDCA Plan amendment. Therefore, impacts and issues related to those privately-owned 360 ac are not considered in this FEIS.

The northern boundary of the IVS project site is adjacent to Imperial County Route S80 (Route S80) and Plaster City, and the southern boundary is adjacent to Interstate 8 (I-8).

The IVS project site currently consists of undeveloped desert land, much of which is available for outdoor recreational uses such as designated routes for off-highway vehicles (OHVs) (no camping is allowed). Two private parcels of land, one owned by a recreational vehicle club and one by a private landowner, are surrounded by the IVS project site. These parcels are not a part of the IVS project. Access to these parcels of land would be provided via the arterial road system within the IVS project site.

There is evidence of human activity across the IVS project site due to networks of BLM-authorized roads as well as unauthorized trails and roads. Geographic Information System (GIS) data found that 1,038 ac within the project boundary have been disturbed by OHVs.

3.12.1.1 California Desert Conservation Area Plan

Approximately half of the IVS project site is within the Yuha Desert Recreation Lands, and the site has been intensely used for OHV recreation. The CDCA Plan designates this area as Multiple-Use L (Limited Use). The Limited Use designation is suitable for recreation "…which generally involves low to moderate user densities." The Limited Use designation also limits all motorized travel to designated routes.

The *Western Colorado Desert Routes of Travel Designations* (WECO) is an amendment to the CDCA Plan. There are ten Open Routes designated by the WECO amendment on the IVS project and construction laydown sites, and two Open Routes in the vicinity of the IVS project and construction laydown sites.

3.12.1.2 Juan Bautista de Anza National Historic Trail

The Juan Bautista de Anza National Historic Trail (Anza Trail) corridor passes through the IVS project site. Connecting Nogales, Arizona with San Francisco in northern California, this approximately 1,200-mile (mi) long corridor and accompanying auto tour route are managed by the United States National Park Service (NPS) consistent with the *Juan Bautista de Anza National Historic Trail Comprehensive Management and Use Plan* (1996). This plan indicates that parts of the IVS project site fall into a High Potential Route Segment between two historic expedition campsites (Nos. 47 and 48). In this area, the Anza Trail corridor is an inferred alignment (between the two historic campsite locations), based on historic journals and maps. The auto tour route travels through the City of El Centro several miles east of the site. According to the NPS, the Anza Trail is mapped and identified by BLM through signs on designated routes of travel north and south of the IVS project site. The NPS further states that the Anza Trail corridor follows paved segments of Dunaway Road, which is east of the IVS project site, and then along Evan Hewes Highway, which is north of the IVS project site.

3.12.1.3 California State Parks

In addition, California State Parks (CSP) administers several recreation areas in the general vicinity of the IVS site. Those areas are described in Table 3-21.

3.12.1.4 Imperial County

The majority of land in Imperial County is designated Open Space/Recreation according to the County's General Plan Land Use Map. The open space and recreation areas under BLM management in Imperial County are designated as open or limited use. In open areas, all forms of cross-country travel are permitted within the posted boundaries; however, in limited use areas, vehicle travel is limited to approved/signed routes of travel and no cross-country vehicle travel is allowed.

Table 3-21 describes recreation areas in the vicinity of the project site.

Table 3-21 Open Space and Recreation Areas

Open Space/ Recreation Area	Jurisdiction/ Administration	Approximate Distance from the IVS Project Site	Approximate Acreage	Allowed Uses
Recreational Vehicle Club	Open Space/ Imperial County	Private parcel surrounded by the IVS project site	640	OHV
Yuha Desert Recreation Lands	Limited Area and ACEC/ BLM	The IVS project site is partially within the boundaries of this designation (Table Note 1)	+175,000	OHV, camping
Plaster City OHV Open Area	Open Area/ BLM	500 feet north of the IVS project site	41,000	OHV, camping
Superstition Mountain	Open Area/ BLM	10 miles north of the IVS project site	13,000	OHV, camping
Anza-Borrego Desert State Park	CSP	10 miles west of the IVS project site	+600,000	Camping, hiking, natural exhibits
Lark Canyon OHV Area and Campground	Limited Use Area/ BLM	20 miles west of the IVS project site	N/A	OHV, camping
Ocotillo Wells State Vehicular Recreation Area	CSP	23 miles north of the IVS project site	+80,000	OHV, camping
Heber Dunes State Recreation Area	CSP	24 miles east of the IVS project site	343	OHV, camping
East Mesa	Limited Use Area/ BLM	32 miles east	N/A	OHV, camping
Imperial Sand Dunes Recreation Area	Open Area/ BLM	35 miles east	118,000	OHV, camping

Table Source: Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; 2010).

Table Note 1: According to the comments provided by the BLM on a draft of the SA/DEIS, the project site is within the Yuha Desert Recreation Lands.

Table Key: ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; CSP = California State Parks; IVS = Imperial Valley Solar; N/A = Not Applicable; OHV = off-highway vehicle.

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3.13 Socioeconomics and Environmental Justice

3.13.1 Demographics

The Imperial Valley Solar (IVS) project would be located primarily (approximately 95%) on Federal land managed by the United States Bureau of Land Management (BLM), 14 miles (mi) west of El Centro, California in unincorporated western Imperial County. The project site is in the eastern section of Imperial County's Ocotillo/Nomirage Planning Area (PA).

In 2000, as reported by the United States Census, the population of the Ocotillo/Nomirage PA was 719 persons. In 2006, the population in the two areas was 800 persons. Imperial County had a total population of 142,361 persons in 2000 and 161,867 persons in 2007.

The unemployment rate for Imperial County was 24.5 percent in February 2009 (not seasonally adjusted). This is not full employment for Imperial County. Over the past few decades, full employment has been typically defined as approximately 4.0 to 5.5 percent unemployment. For California, the unemployment rate was 10.9 percent in February 2009 (not seasonally adjusted).

3.13.2 Environmental Justice

According to *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December 1997), minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50 percent of the total population or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis.

For the IVS project, the total population within the 6-mi radius of the project site is 4,583 persons, and the total minority population is 3,725 persons or 81.3 percent of the total population within 6 mi of the project site.

The below-poverty-level population is based on 2000 United States Census block group data within a 6-mi radius of the IVS project site. The below-poverty-level population in that area is 163 people or about 11 percent of the total population in that area.

3.13.3 Applicable Regulations, Plans, and Policies/Management Goals

Table 3-22 summarizes the applicable socioeconomic laws, ordinances, regulations, and standards (LORS).

Table 3-22 Socioeconomics and Environmental Justice Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Executive Order 12898	"Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses Federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the EPA and all other Federal agencies (as well as State agencies receiving Federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.
Civil Rights Act of 1964, Public Law 88 352, 78 Stat. 241 (Codified as amended in several sections of 42 USC)	Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national programs in all programs or activities receiving Federal financial assistance.
Emergency Economic Stabilization Act of 2008 (P.L. 110 343) Business Solar Investment Tax Credit (IR Code Section 48)	Extends the 30 percent ITC for solar energy property for eight years through December 31, 2016. The bill allows the ITC to be used to offset both regular and AMT and waives the public utility exception of current law (i.e., permits utilities to directly invest in solar facilities and claim the ITC). The 5-year accelerated depreciation allowance for solar property is permanent and unaffected by passage of the eight-year extension of the solar ITC.
State	
Government Code Section 65040.12 and PRC Section 72000	California law defines environmental justice as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies".
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or

Applicable Law	Description
	reconstruction of school facilities.
California Government Code, Sections 65996–65997	These sections include provisions for school district levies against development projects. As amended by SB 50 (stats. 1998, ch. 407, sec. 23), these sections state that, except for fees established under Education Code 17620, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost of school facilities.
California Revenue and Tax Code 70 74.7	Property taxes are not assessed on solar facilities. AB 1451 extended the current property tax exclusion for new construction of solar energy systems to January 1, 2017.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: AB = Assembly Bill; AMT = alternative minimum tax; EPA = United States Environmental Protection Agency; ITC = investment tax credit; PRC = Public Resources Code; SB = Senate Bill; USC = United States Code.

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3.14 Special Designations

3.14.1 Setting and Existing Conditions

The site proposed for the Imperial Valley Solar (IVS) project is approximately 6,500 acres (ac) in southwest Imperial County. The site consists of an estimated 6,140 ac of public land administered by the United States Bureau of Land Management (BLM), and approximately 360 ac of private land under the jurisdiction of Imperial County. The analysis in this Final Environmental Impact Statement (FEIS) focuses on the 6,140 ac under the jurisdiction of the BLM as that is the area subject to the BLM right-of-way (ROW) grant and amendment to the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended). The approximately 360 ac in private ownership are not within the jurisdiction of the BLM and would not be included in the ROW grant or the CDCA Plan amendment. Therefore, impacts and issues related to those privately-owned 360 ac are not considered in this FEIS.

The community of Edgar is approximately 0.5 mile (mi) east of the project site. The Imperial Lakes Specific Plan residential area is 0.7 mi northeast of the project site. The communities of Coyote Wells and Ocotillo are approximately 1.3 and 2.9 mi west of the project site, respectively.

The Yuha Desert Area of Critical Environmental Concern (ACEC) is across Interstate 8 (I-8) from the project site, which is immediately north of I-8. The Yuha Desert ACEC is under BLM jurisdiction.

3.14.2 Wilderness, Areas of Critical Environmental Concern, and Special Areas

3.14.2.1 Wilderness Areas

All Public Lands in the California Desert District were analyzed and summarized in 1979 wilderness inventory decisions performed pursuant to the Federal Land Policy and Management Act (FLPMA). Public Land in the IVS project area is contained within CDCA Wilderness Inventory Unit [WIU] #CDCA 370. That 1979 analysis indicated that WIU #CDCA 370 is approximately 8,000 ac and is bounded by I-8 on the south, Evans Hewes Highway on the north, and Dunaway Road on the east. This WIU is characterized by northeast-trending washes

and is lightly vegetated with creosote and ocotillo, primarily in the washes. Elevations range from sea level to 300 feet above sea level. The extent of wilderness ways affected by off-highway vehicle (OHV) use and imprints of mining were substantially noticeable. Any opportunities for solitude or primitive and unconfined recreation were not outstanding, due to the lack of vegetative or topographic screening, size, and the configuration of the WIU. The 1979 inventory decision was that Public Lands in the area did not contain requisite wilderness characteristics.

According to the Federal Wilderness Act, a designated Wilderness Area is defined as having the following four primary characteristics:

- A natural and undisturbed landscape
- Extensive opportunities for solitude and unconfined recreation
- At least 5,000 contiguous acres
- Feature(s) of scientific, educational, scenic, and/or historic value

Therefore, no part of the WIU was identified as a Wilderness Area. Since 1979, the major change in the WIU has been the authorization and construction of a powerline and associated road that divides the WIU into east and west roadless areas, with the acreages of those two areas at approximately 3,000 and 5,000 ac, respectively. Other imprints of man that degrade wilderness character remain at 1979 levels or have increased. No changes have occurred since 1979 that would warrant reversal of the 1979 finding that wilderness characteristics were not present in the area.

3.14.2.2 Areas of Critical Environmental Concern

The FLPMA defines an ACEC as an area "…within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards."

The CDCA Plan identifies Special Areas as areas "…which possess rare, unique, or unusual qualities of scientific, educational, cultural, or recreational significance (and) may have one of 11 types of 'Special Area' designations applied to them."

The Special Areas closest to the Imperial Valley Solar (IVS) project site are the Yuha Desert ACEC (which is south of I-8 and the project site), the Jacumba Mountains Wilderness (which is approximately 4 mi southwest of the project site), and the Coyote Mountains Wilderness (which is approximately 7 mi northwest of the project site).

The Yuha Desert ACEC contains several unique attractions, including the Juan Bautista de Anza National Historic Trail (Anza Trail), which runs through the ACEC, and then as an inferred alignment, through or adjacent to the IVS project site and north to San Sebastian Marsh; geoglyphs created by Native Americans; an area of rare crucifixion thorns; oyster shell beds; and the Yuha Well. Refer to Sections 3.5, 3.12, 4.5, 4.12, and 4.16 for detailed discussions regarding the setting and impacts associated with the Anza Trail.

The Jacumba Mountains Wilderness comprises 31,237 ac that are generally bounded by I-8 to the north and the California-Mexico international border to the south. This wilderness area is notable for private lands and recreational activities including camping and hunting.

The Coyote Mountains Wilderness comprises 18,622 ac and offers recreational activities such as hiking, camping, and sightseeing.

The IVS project site is not within or near any known CDCA Plan-designated Special Area. However, the proposed transmission lines traverse the Yuha Desert ACEC.

3.14.3 Prime Farmland, Farmland of Statewide Importance, and Farmland of Local Importance

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) provides information on the classification of soils in areas, focusing on areas with agricultural lands. According to the NRCS Web Soil Survey (WSS), the entire IVS project site has not been surveyed for agricultural soils. However, approximately 30 percent of the total project site, specifically approximately 1,931 ac on the east part of the site, has been surveyed and is designated as “Prime Farmland if Irrigated” and “Farmland of Statewide Importance.”

The California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) provides statistics on the conversion of farmland to nonagricultural uses throughout the State. According to the FMMP map of Imperial County, approximately 30 percent of the IVS project site has been surveyed and is considered “Other Land.” Other Land is land not included in a farmland mapping category. Adjacent to the eastern boundary of the construction laydown site is “Farmland of Local Importance,” and approximately 1.5 mi east of the laydown site is

"Prime Farmland" and "Farmland of Statewide Importance." The western part of the IVS project site has not been surveyed by the DOC.

Historically, the project site has not accommodated agricultural production activities. Currently, the site is not used for agricultural production.

3.14.4 Donated Lands

The BLM can be the recipient and trustee of land donated by individuals or groups. Often such lands are donated with the expressed interest of preserving the resources that characterize these lands. In so doing, a restrictive instrument such as a conservation easement or deed restriction is attached to the donation and land that would control its use, often in terms of prohibiting development or change to the landscape. There is no record of such a donation and accompanying restrictive instrument associated with the IVS project site. Therefore, donated lands are not analyzed in this FEIS.

3.14.5 National Scenic and Historic Trails

As noted above, the inferred alignment of the Anza Trail passes through and/or is adjacent to the IVS project site. Connecting Nogales, Arizona with San Francisco, the 1,200 mi long trail corridor and the accompanying auto tour route are co-managed by the BLM and the United States National Park Service (NPS) under the *Juan Bautista de Anza National Historic Trail Comprehensive Management and Use Plan* (1996). That plan indicates that part of the IVS project site is within an area identified as a High Potential Route Segment between two historic expedition campsites (Nos. 47 and 48). Refer to Sections 3.5, 3.12, 4.5, 4.12, and 4.16 for detailed discussions regarding the setting and impacts associated with the Anza Trail.

3.14.6 National Wild and Scenic Rivers

The National Wild and Scenic Rivers Act of 1968 seeks to preserve certain rivers with outstanding, natural, cultural, and recreational values in a free-flowing condition. The Act attempts to preserve the unique characteristics of designated rivers while simultaneously recognizing potential use and development along those rivers. Each designated river is administered by either a state or Federal agency and may include the entire river, its tributaries or segments thereof.

National Wild and Scenic Rivers

Section 3.14.7.3 provides the definition of the National Wild and Scenic Rivers Act of 1968. In addition to this definition, the Act states that a wild, scenic or recreational river area eligible to be included in the system is a free-flowing stream and the related adjacent land area that possesses one or more of the values referred to in Section 1, subsection (b) of the Act. Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the national wild and scenic rivers system and, if included, shall be classified, designated, and administered as one of the following:

(1) **Wild River Areas:** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

(2) **Scenic River Areas:** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

(3) **Recreational River Areas:** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Palm Canyon Creek, located approximately 80 mi to the northwest, is the nearest waterway to the project site that is designated as a National Wild and Scenic River. There are no designated National Wild and Scenic Rivers on or in the vicinity of the IVS project site.

3.14.7 Laws, Ordinances, Regulations, and Standards

3.14.7.1 Wilderness, Areas of Critical Environmental Concern, and Special Areas

FLPMA (1976, 43 Code of Federal Regulations [CFR] 1600) provides for the following:

> "Establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the proposed project is that Title V, Section 501 establishes BLM's authority to grant rights-of-way for generation, transmission, and distribution of electrical energy."

The Wilderness Act of 1964 provided for the establishment of a National Wilderness Preservation System with areas to be designated from public lands. Public lands administered by the BLM were included for wilderness review under FLPMA. The CDCA Plan was developed, in part, to implement the Wilderness Act and establishes the following:

(1) Until congressional release or designation as Wilderness, provide protection of wilderness values so that those values are not degraded so far as to significantly constrain the recommendation with respect to an area's suitability or nonsuitability for preservation as wilderness.

(2) Provide a wilderness system possessing a variety of opportunities for primitive and unconfined types of recreation, involving a diversity of ecosystems and landforms, geographically distributed throughout the desert.

(3) Manage a wilderness system in an unimpaired state, preserving wilderness values and primitive recreation opportunities, while providing for acceptable use.

For ACECs and Special Areas, the CDCA Plan provides the following management goals:

(1) Identify and protect the significant natural and cultural resources requiring special management attention found on the BLM-administered lands in the CDCA.

(2) Provide for other uses in the designated areas, compatible with the protection and enhancement of the significant natural and cultural resources.

(3) Systematically monitor the preservation of the significant natural and cultural resources on BLM-administered lands, and the compatibility of other allowed uses with these resources.

3.14.7.2 Farmlands

The Federal Farmland Protection Policy Act (FPPA, Subtitle I of Title XV, Sections 1539–1549 of the Agriculture and Food Act of 1981) provides for the following:

> "The FPPA is intended to minimize the impact [F]ederal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that—to the extent possible—[F]ederal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every 2 years. For the

purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land."

3.14.7.3 National Wild and Scenic Rivers

The National Wild and Scenic Rivers Act (Public Law 90-542; 16 United States Code [USC] 1271 et seq.) establishes the following:

> "It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes; and
>
> "The purpose of this Act is to implement this policy by instituting a national wild and scenic rivers system, by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time."

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3.15 Traffic and Transportation

3.15.1 Project Location

The Imperial Valley Solar (IVS) project site is on approximately 6,140 acres (ac) of Federal land managed by the United States Bureau of Land Management (BLM) and approximately 360 ac of privately owned land. The site is approximately 100 miles (mi) east of the City of San Diego, 14 mi west of the City of El Centro, and 4 mi east of the unincorporated community of Ocotillo. The IVS project site is south of Evan Hewes Highway, west of Dunaway Road, and north of Interstate 8 (I-8) in unincorporated Imperial County. Evan Hewes Highway and Dunaway Road provide direct access to the site. The existing transportation system and facilities in the vicinity of the IVS project site are described in the following sections.

3.15.2 Local Highways and Roads

The following roads are in the vicinity of the IVS project site:

- **Evan Hewes Highway:** Evan Hewes Highway is an east-west road that parallels I-8 to the north. The road begins east of the City of Holtville at a junction at I-8 and travels through El Centro and Seeley before ending in Ocotillo. This road is typically used for local travel and provides an alternative to I-8. In the vicinity of the IVS project site, Evan Hewes Highway is 2 lanes and does not have any bicycle lanes or sidewalks. The posted speed limit adjacent to the IVS project site is 55 miles per hour (mph). Evan Hewes Highway is also classified as Imperial County Route S80 and has been classified as a historic highway by the State of California because it was once part of United States Highway 80.

- **Dunaway Road:** Dunaway Road is a relatively short road that connects I-8 and Evan Hewes Highway. This two lane north-south road is unimproved with no curb and gutter. The road does not have bicycle or pedestrian facilities. The speed limit adjacent to the IVS project site is 55 mph.

- **Interstate 8:** I-8 is an interregional highway between extending between San Diego and Arizona. Through Imperial County, I-8 provides 2 lanes in each direction of grade-separated highway. The posted speed limit is 70 mph and there are no bicycle or pedestrian facilities. According to the California Department of Transportation

(Caltrans) 2007 average annual daily traffic counts, I-8 carries a total of 13,300 vehicles per day (vpd) adjacent to the IVS project site. This is a low traffic volume for a 4-lane, grade separated highway.

3.15.3 Levels of Service

Level of service (LOS) is a measure of congestion as experienced by motorists. Intersection operations in the vicinity of the IVS project site were evaluated using the *Highway Capacity Manual 2000* (HCM) methodology. This methodology assesses delay at an unsignalized intersection for movements operating under traffic control. For example, at an intersection where only the side-street has a stop sign, delay will be reported for movements controlled by the stop sign. The delay is then assigned a corresponding letter grade that represents the overall operating condition of the intersection. These grades range from LOS A (free flow) to LOS F (congested).

3.15.4 Study Area Road Segments

The following road segments in the vicinity of the IVS project site were considered in the evaluation of the potential impacts of the project on traffic operations:

- I-8 west of Imperial Highway
- I-8 east of Dunaway Road
- State Route 98 (SR-98) west of Imperial Highway
- Imperial Highway north of SR-98
- Evan Hewes Highway east of Imperial Highway
- Evan Hewes Highway west of Dunaway Road
- Dunaway Road north of the I-8 westbound ramps

Table 3-23 provides the existing average daily traffic and the existing LOS for the road segments in the IVS project area. As shown in the Table 3-23, all the existing road segments operate at LOS A.

Table 3-23 Existing Conditions on Road Segments in IVS Project Area

Roadway Segment	Average Daily Traffic	Level of Service
I-8 west of Imperial Highway	15,300	A
I-8 east of Dunaway Road	13,400	A
SR-98 west of Imperial Highway	1,500	A
Imperial Highway north of SR-98	315	A
Evan Hewes Highway east of Imperial Highway	1,250	A
Evan Hewes Highway west of Dunaway Road	515	A
Dunaway Road north of I-8 Westbound Ramps	780	A

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: ADT = average daily traffic; I-8 = Interstate 8; IVS = Imperial Valley Solar; SR-98 = State Route 98.

3.15.5 Study Area Intersections

The following intersections on the surrounding road network were considered in the evaluation of the potential impacts of the IVS project on traffic operations:

- I-8 westbound ramp/Imperial Highway
- I-8 eastbound ramp/Imperial Highway
- SR-98/Imperial Highway
- I-8 westbound ramp/Dunaway Road
- I-8 eastbound ramp/Dunaway Road

Table 3-24 provides the existing AM and PM peak hour delays in seconds at these intersections in the IVS project area. As shown in Table 3-24, all the existing intersections operate at LOS A for both AM and PM peak hour delays at the intersections.

3.15.6 Other Modes of Transportation in the Project Area

3.15.6.1 Public Transportation

No public transit service is provided in the IVS project area. Imperial Valley Transit is the transit service provider in this part of Imperial County. However, no regularly scheduled bus routes operate near the IVS project site.

Table 3-24 Existing Conditions for Intersections in the Project Area

Study Intersection	Existing Conditions AM Peak Delay (Table Note 1)	Existing Conditions AM Peak LOS	Existing Conditions PM Peak Delay (Table Note 1)	Existing Conditions PM Peak LOS
I-8 WB Ramp/Imperial Highway	1.7	A	3.3	A
I-8 EB Ramp/Imperial Highway	5.6	A	3.3	A
SR-98/Imperial Highway	0.7	A	0.8	A
I-8 WB Ramp/Dunaway Road	2.5	A	1.9	A
I-8 EB Ramp/Dunaway Road	6.9	A	7.4	A

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table General Note: All study intersections are unsignalized.

Table Note 1: Average Delay reported in seconds per vehicle.

Table Key: EB = eastbound; I-8 = Interstate 8; LOS = level of service; SR-98 = State Route 98; WB = westbound.

Imperial Valley Transit offers limited service to remote zones in its service area. The service provided is identified as a lifeline service and reaches Ocotillo once a week, which is in the general vicinity of the IVS project site.

3.15.6.2 Bicycle and Pedestrian Facilities

There are on-street bike lanes or off-street bike paths on or in the vicinity of the IVS project site. Bicycle activity in the vicinity of the IVS project site is minimal-to-none.

The County of Imperial Bicycle Master Plan Update (September 2003) identifies all planned bicycle facilities in the County. The IVS project site is outside the Master Plan study area. Therefore, it is anticipated that no bicycle facilities are planned for the vicinity of the IVS project site.

There are no pedestrian facilities (such as sidewalks and walkways) adjacent to or in the immediate vicinity of the IVS project site. Pedestrian activity in the vicinity of the IVS project site is minimal-to-none.

3.15.6.3 Airports

The Federal Aviation Administration (FAA) has notification requirements for land uses within a 20,000 ft horizontal distance of an airport. There are no airports within 20,000 ft of the IVS project site boundary. Airports further away from the IVS project site are:

- Emory Ranch Airport, a small private airport, is 50,000 ft west of the IVS project site
- Naval Air Facility El Centro is 41,000 ft northeast of the IVS project site
- Imperial County Airport is 72,000 ft northeast of the IVS project site

3.15.6.4 Railroads

A railroad line parallels the northern boundary of the IVS project site between Evan Hewes Highway and the site boundary. In the vicinity of the IVS project site, Dunaway Road crosses that rail line at-grade. Additionally, an unimproved (dirt) road crosses the railroad tracks at the location of the proposed main access to the IVS project site, off Evan Hewes Highway along the northern part of the IVS project site.

The rail line is owned and controlled by a subsidiary of the San Diego Metropolitan Transit System (MTS) and is operated as a private transit system. The segment of the rail line adjacent to the IVS project site is part of the Desert Line of the San Diego and Arizona Eastern Railway, which is a short-line freight route from the Mexico border to the Union Pacific Line in El Centro.

The Desert Line has been out of service east of Tecate since 1983. MTS is trying to assemble the funding needed to repair and upgrade the line to restore freight service on that segment of the line.

3.15.7 Applicable Laws, Ordinances, Regulations, and Standards

The analysis of the traffic and transportation effects of the IVS project also examined the compatibility of the IVS project with applicable laws, ordinances, regulations, and standards (LORS). The Federal, State, and local regulations applicable to the IVS project are listed in Table 3-25. The IVS project would include chemical storage tanks on site along with delivery of hydrogen gas to the site. The applicant has indicated the IVS project would comply with all LORS related to the transport of hazardous materials. Refer also to Section 3.11, Public Health and Safety, and Hazardous Materials, for additional discussion regarding hazardous materials.

Table 3-25 Traffic and Transportation Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
CFR Title 49, Sections 171–177 & 350–399.	Governs the transportation of hazardous materials and related guidelines.
Code of Federal Regulations Part 77, Federal Aviation Administration Regulations	Implements standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the FAA of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.
CFR Title 49, Sections 350–399 and Appendices A–G	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles who operate on public highways.
State	
California Vehicle Code Division 2, Chapter 2.5, Division 6, Chapter 7, Division 13, Chapter 5, Division 14.1, Chapters 1 and 2, Division 14.8, Division 15	Includes regulations pertaining to 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 Division 1 and 2, Chapter 3 and Chapter 5.5	Includes regulations for the care and protection of State and County highways, and provisions for the issuance of written permits.
Local	
County of Imperial General Plan Circulation and Scenic Highways Element	Requires that developments contribute positively to the County's transportation network and that negative impacts are reduced. For example, requirements include new developments provide local roads to serve the needs of the development, future construction does not interfere with present and potential highway and right-of-way needs, and freight loading/unloading does not occur on public roadways. In addition, construction of private streets in developments is allowed.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: CFR = Code of Federal Regulations; LORS = laws, ordinances, regulations, and standards.

3.16 Visual Resources

3.16.1 Regional Landscape Character

The site for the Imperial Valley Solar (IVS) project covers approximately 6,500 acres (ac), which is roughly 10 square miles (sq mi), in the southwest part of Imperial County about 14 miles (mi) west of the town of El Centro. The project site is in the west part of the Salton Trough, a low-lying sedimentary basin once comprising a lakebed as recently as 300 years ago, which currently includes the Salton Sea, a human-made lake approximately 23 mi northeast of the project site. The project site and the surrounding areas are relatively level, although the area becomes more highly dissected and topographically varied as it trends further south into the Yuha Desert. The Salton Trough occupies the western edge of the vast Basin and Range physiographic province. The Salton Trough landscape is bounded to the west by the Jacumba and Coyote Mountains, each of which are Wilderness Areas (WAs) designated by the United States Bureau of Land Management (BLM), and to the northwest by the mountains in Anza-Borrego Desert State Park and the Fish Creek Mountains WA. The Coyote Mountains rise a short distance west of the project site to a height of 2,400 feet (ft) at Carrizo Mountain. Mount Signal in Mexico is prominently visible south of the project site and south of the Yuha Desert.

The Salton Trough marks the western limit of the Colorado Desert, a section of the larger Sonoran Desert that extends across the southwestern United States and northern Mexico. Native vegetation in this region consists of Sonoran creosote bush scrub, a low-growing desert land-cover type characteristic throughout the Sonoran Desert and typical of the Colorado Desert as a whole. This plant community is characterized by sparse, low-growing green and tan colored scrub, often interspersed with the distinctive vertical forms of Ocotillo cacti.

Throughout the region, large expanses of nearly vegetation-free desert pavement are a characteristic element. Desert pavement consists of large areas of naturally exposed small rock and gravel, darkly colored by weathering and exposure, that form a distinctive visual surface image typical of the region.

The IVS project site is less than 2 mi west of green, highly irrigated, level farmlands in the Imperial Valley, which extend north to the Salton Sea and south to the United States/Mexico international border, comprising a distinct landscape unit contrasting markedly with the desert landscape on and in the immediate vicinity of the IVS project site.

The IVS project site is at the northern boundary of the Yuha Desert, a distinctive section of the Colorado Desert identified by the BLM as an Area of Critical Environmental Concern (ACEC) for its unique biological, historic, and archaeological characteristics. The boundary of that designated BLM ACEC is immediately south of nearby Interstate 8 (I-8).

3.16.2 Project Site Landscape Character

Figure 3-4 depicts views of the IVS project site and the surrounding areas. (All the figures referred to in this section are provided following the last page of text in this section to minimize disruptions in the text.)

The IVS project site consists of approximately 6,140 ac of public land administered by the BLM, and approximately 360 ac of private land under the jurisdiction of Imperial County. The site is bounded to the north by Plaster City (a large US Gypsum Corporation wallboard manufacturing plant), Evan Hewes Highway (Imperial County Route S80) and, north of the highway, the Plaster City Off-Highway Vehicle (OHV) Open Area. To the south, the IVS project site is bounded by I-8 and, south of I-8, the Yuha Desert ACEC. Two private parcels of land, one owned by a recreational vehicle club and one by a private landowner, are surrounded by the IVS project site but are not a part of the project.

The IVS project site occupies a band of relatively level, arid lowlands between the level, irrigated farmlands of Imperial Valley 2 mi to the east, and the prominently visible Jacumba and Coyote Mountains that begin rising approximately 2 mi to the west. The site also extends into part of the Upper Yuha Desert, which is described further below. In broad terms, the site represents a transitional area between the relatively featureless and highly disturbed West Mesa to the north and the topographically varied, scenically rich Yuha Desert ACEC to the south.

The IVS project site is largely undeveloped public desert land. The site is currently managed by the BLM as Multiple-Use Class Limited Use (MUC L) with limited OHV use (that vehicular travel is restricted to designated trails) and minimal evident surface disturbance. In contrast, the site adjoins the BLM-designated Plaster City OHV Open Area, north of Evan Hewes Highway, which is a popular OHV recreation and camping area that experiences intensive OHV use, including OHV racing events and off-trail driving by high numbers of visitors. Though distinctly less disturbed than the Plaster City OHV Open Area, existing human-made visual intrusions on or in the immediate vicinity of the IVS project site include the Plaster City wallboard factory, the Southwest Powerlink transmission line, I-8, and Evan Hewes Highway. These features, though very evident, remain visually subordinate to the vast open expanse of the site and its surroundings.

The Juan Bautista de Anza National Historic Trail (Anza Trail), managed jointly by the BLM and the United States National Park Service (NPS), crosses the west part of the site. However, the segment of the trail on the project site is not marked. Within the ACEC, travelers may follow the designated trail. North of the ACEC, travel on the historic trail is redirected around the project site by BLM, where it reconnects with the designated historic alignment, paralleling an existing rail line in the Plaster City OHV Open Area north of Plaster City.

There are several small rural communities in the IVS project viewshed, including the town of Ocotillo over 4 mi to the west; Coyote Wells, approximately 4 mi to the southwest; Seeley, approximately 7 mi to the east; and the Imperial Lakes residential development approximately 1.5 mi northeast of the site on Evan Hewes Highway. Centinela State Prison is approximately 2.5 mi northeast of the project site.

3.16.3 Visual Setting of the IVS Project Site

3.16.3.1 Project Site Viewshed

In general, based on a computer-generated, geographic information system (GIS) viewshed map, the IVS project would be visible to most of the area within an approximately 5 mi radius of the project site, with the exception of some areas to the west and southwest. A key feature of the desert landscape is the potential for large projects to be seen over great distances where even slightly elevated viewpoints exist due to the large open areas of level topography and the absence of intervening landscape features.

3.16.3.2 Landscape Units and Key Observation Points

Figure 3-5 divides the project site viewshed into broad landscape character units and identifies key observation points (KOPs) that have been used as the basis for the visual impact analysis of the IVS project. KOPs were used in visual analysis as the basis for evaluating potential project impacts. The KOPs represent key sensitive viewer groups and viewing locations that potentially could be affected by the IVS project. Figure 3-6 depicts various typical image types and features within the project viewshed.

The landscape units represent contiguous areas with broadly consistent visual character that are rated for their visual quality. The KOPs were rated according to the visual quality of their settings and an assessment of their levels of viewer concern and viewer exposures. Those three primary attributes are summarized in the overall visual sensitivity rating of each KOP,

which reflects an assessment of the overall susceptibility to visual impact of the viewer group/receptors that each KOP represents. These sensitivity ratings serve as the environmental baseline against which potential project impacts, measured in terms of level of visual change, were evaluated. Because viewer concern and exposure may vary among different receptors within a landscape unit, the overall sensitivity of particular KOPs within a unit may also vary.

The baseline mapping of landscape units in this assessment is derived from an in-depth visual resource inventory in the *Yuha Desert/West Mesa Visual Resource Management (VRM) Inventory* (Michael Clayton Associates, 2008), specifically Map No. 1 for the California Desert District – El Centro. In that inventory, the landscape units were delineated, assessed, and rated following the BLM VRM system, as documented in that study. Landscape units are referred to in that study as Scenic Quality Rating Units (SQRUs) and are identified by number. Following the VRM methodology, the inventory mapping and evaluation reflect an assessment of the landscape's scenic quality, viewer sensitivity, and distance zone of observers. These categories are generally analogous to three primary components of overall visual sensitivity: visual quality, viewer concern, and viewer exposure. In the Yuha Desert study, inventory results were then assigned as Interim Visual Resource Management (IVRM) Classes. In this analysis, the Yuha Desert inventory and its IVRM Classes are referenced solely with respect to their in-depth field mapping of landscape units (visual character units), and to the scenic quality ratings that underlie them. The BLM inventory is thus regarded solely as descriptive of the existing environmental condition of the setting. No particular management prescriptions are assumed or implied by this analysis in relation to IVRM categories assigned in the Yuha Desert study. In Figure 3-5, as well as the discussion below, landscape units are given descriptive names for context, followed by the identifying SQRU number of the original BLM inventory in parentheses.

The KOPs used in this study include those selected in consultation with California Energy Commission (CEC) staff. Additional KOPs were added for this analysis. In the following discussion, distance zone terminology does not refer to the BLM VRM usage, but rather is used in the context of the CEC method as follows: "foreground" is used generically to refer to viewing distances under 0.5 mi from the project site, "middle-ground" to distances between 0.5 and 5 mi, "near middle-ground" refers to that part of the middle-ground under roughly 1 mi, and "background" to distances over 5 mi.

Because the KOP photos represent the existing views of areas later discussed in view simulations of the IVS project, the reader is referred to these "before project" photos in the discussion that follows. The figure numbers referring to each KOP below appear out of sequence, but may be found along with all other figures at the end of this section. In each case, the designation "**a**" after the figure number indicates the "before" (existing) view of a KOP in the simulation pairs.

Plaster City Open Off-Highway Vehicle Area/West Mesa (Scenic Quality Rating Unit 9) - Key Observation Point 1

KOP 1 represents potential viewers of the IVS project in the Plaster City OHV Open Area immediately north of the project site. Figure 3-7 depicts the existing view from KOP 1. This is a BLM-designated and administered off-road recreational vehicle area that is heavily used for off-road racing and driving as well as for amateur rocket launching. It comprises the southern part of West Mesa, a large, flat mesa in the western Salton Trough south of Superstition Mountain; this area includes parts of the Superstition Mountain OHV Open Area, the West Mesa ACEC, the United States Naval Air Facility El Centro Desert Bombing and Training Ranges, and the Plaster City OHV Open Area. This landscape unit is relatively featureless, characterized by large expanses of flat topography, dissected by intermittent seasonal washes. Land cover is low-growing, nondescript Sonoran creosote bush scrub that is naturally very sparse in this area but is generally visually dominated to an even greater degree by lighter-colored exposed sand and soil due to pervasive surface disturbance by intensive OHV use. The prevailing very light to white soil color forms contrasting patterns of disturbance where concentrated OHV activity has disturbed the scrub vegetation, reducing the scenic intactness of the landscape in many of the most-used parts of the Plaster City OHV Open Area. Extensive areas of OHV disturbance, an existing rail line, the US Gypsum Corporation Plaster City plant, and the existing 500 kilovolt (kV) Southwest Powerlink transmission line are existing visual disturbances that detract from the scenic integrity of the landscape in the foreground and near-middle-ground distances of the IVS project site and Evan Hewes Highway.

- **Visual Quality:** The visual quality of this landscape unit varies between moderate and moderately low, depending on the degree of existing visual impairment in the viewer's foreground. As described, numerous visually compromising elements characterize the area, including the US Gypsum Corporation plant, transmission lines, a rail line, and extensive ground disturbance from open OHV use.

- **Viewer Concern:** Viewer concern in this landscape unit is considered moderately high. Although the focus of many Plaster City OHV Open Area recreationists may be more on racing and driving than scenery, the numbers of visitors to this area can be very high, and an elevated level of concern with scenic values is presumed in the California Desert Conservation Area in general. The BLM El Centro Field Office estimated 32,457 users of the Plaster City OHV Open Area in 2007.

- **Viewer Exposure:** Viewer exposure in this landscape unit is moderately high. Views are inherently unobstructed within this open, level landscape and may occur at foreground distance. Viewer numbers, though low much of the year, may be very high during peak use periods.

Overall, the visual sensitivity of this landscape unit is considered to be moderately high.

Upper Yuha Desert (Scenic Quality Rating Unit 1) – Key Observation Points 2, 3, 4, 5

The entire IVS project site and KOPs 2, 3, 4, and 5 are within the Upper Yuha Desert Unit (SQRU 1). This unit is visually distinguished from the topographically similar West Mesa, which is immediately to the north, in part due to the much lower degree of disturbance in contrast to the Plaster City OHV Open Area to the north. As described above, this area south of the Evan Hewes Highway, including the project site, is a limited use area in which vehicular travel is restricted by the BLM to designated trails. As a result, surface disturbance, though present, is far less than as seen in the Plaster City OHV Open Area to the north, and the image of intact scrub vegetation predominates. SQRU 1 is also distinguished from the adjoining Yuha Desert ACEC to the south by the intrusion of existing human-made disturbances including Evan Hewes Highway, the Southwest Powerlink transmission line, a rail line, and Plaster City. In addition, the physiography of the Yuha Desert in SQRU 2 south of I-8 becomes increasingly varied and vivid in contrast to the generally flat expanses of SQRU 1.

- **Visual Quality:** While human-made intrusions and ground disturbance remain visually subordinate within this relatively intact natural landscape, the landforms and vegetation in this unit lack exceptional vividness. Visual quality is enhanced by mountains in the background distance. It is also frequently impaired by haze and air pollution that obscure or filter distant views throughout much of the year. The visual quality of this landscape unit was characterized by Michael Clayton Associates in 2008 as Scenic Class C, and by CEC staff as moderate.

Nearest Residence East of the Imperial Valley Solar Project Site (1.5 miles) – Key Observation Point 2

KOP 2 is a view from the nearest residence to the IVS project site, looking southwest into the project site from the Evan Hewes Highway at a distance of roughly 1.5 mi. Figure 3-8 depicts the existing view of the project site from KOP 2. KOP 2 is also representative of viewers on Evan Hewes Highway. Other nearby residences include the Imperial Lakes development, but those residences are screened from views of the project site by dense landscaping at the boundary of that development. Views of level open desert characterized by light tan-colored soils and sparse scrub vegetation occupy the visual foreground and middle-ground of this view. Ridges of the distant Coyote and Jacumba Mountains can be seen on the horizon at background distances of 20 mi or more. From KOP 2, looking southwest into the project site, the

US Gypsum Corporation plant and Southwest Powerlink transmission line are distant (3 mi or more) and visually very subordinate in this view.

As discussed above, the visual quality of this unit is considered moderate.

- **Viewer Concern:** The viewer concern in this KOP is considered moderately high because residences are generally considered to have high sensitivity. However, the number of residences at this distance from the project site is very low. Viewer concerns of motorists on Evan Hewes Highway is considered moderate; those viewers range from workers who have a low concern for scenery to OHV recreationists who have varying levels of concern for scenic values.

- **Viewer Exposure:** Viewer exposure at this distance from the project site is moderate. Views are open and unobstructed, but the viewing distance diminishes the visibility of the project site. Viewer numbers, though low much of the time, can be high during OHV events and peak use periods.

Overall, the visual sensitivity of KOP 2 is considered to be moderately high.

Nearest Residence to the Proposed Transmission Line – Key Observation Point 3

KOP 3 is a view from the nearest residence to the proposed project transmission line, adjoining the Westside Main Canal at the western edge of the Imperial Valley agricultural area, and was selected to evaluate potential visual impacts of that proposed project transmission line. Figure 3-9 depicts the existing view from KOP 3. The proposed project transmission line would parallel the existing Southwest Powerlink transmission line. The view from this part of SQRU 1 is substantially similar to that from KOP 2. As at KOP 2, views of level, relatively featureless open desert characterized by light tan-colored soils and sparse scrub vegetation occupy the visual foreground and middle-ground. Ridges of the distant Coyote and Jacumba Mountains can be seen on the horizon at background distances of 20 mi or more. The existing Southwest Powerlink transmission line is visible at a distance of as little as 1 mi, detracting from the intactness of the landscape setting, but remaining visually subordinate at this distance.

- **Viewer Concern:** The viewer concern at this KOP is moderate. The number of residential viewers represented in this view is very low, and their focus on scenic values in this agriculture-oriented context is considered moderately low.

- **Viewer Exposure:** Views within this landscape type are oriented inward; that is, the canal levees bounding the area, along with occasional vegetation, tend to filter or

block views outward toward the desert, directing attention toward fields and residences in the farmland landscape. Viewer exposure to the proposed project transmission line from this KOP is considered low.

Overall, the visual sensitivity of this KOP is considered to be moderately low.

View from the Town of Ocotillo (5 mi) – Key Observation Point 4

KOP 4 is a view from the town of Ocotillo, roughly 5 mi west of the project site on I-8, and is also representative of I-8 motorists at background distances from the project site. Figure 3-10 depicts the existing view from KOP 4. Viewing conditions of this panorama over the Yuha Desert landscape unit are quite different than from KOPs 2 and 3. A broad overview of the West Mesa and Yuha Desert area is visible in the distance due to the elevated position of this KOP above the valley floor. The level, featureless character of the setting landscape and the relative absence of vivid features are evident in this view.

- **Viewer Concern:** Viewer concern in this KOP is considered moderately high, due to an elevated level of concern with scenic values presumed in the CDCA in general, and a relatively high proportion of motorists on I-8 concerned with those scenic values.

- **Viewer Exposure:** Viewer exposure in this KOP is moderate. Views are open, unobstructed, and heightened by the panorama provided by the elevated viewing position. The overall viewer numbers on I-8 are high but viewing distance diminishes visibility of the project from this KOP, which is representative of background distance views.

Overall, the visual sensitivity of this KOP is considered to be moderately high.

View from the Southeast Corner of the IVS Project Site, at Dunaway Road – Key Observation Point 5

KOP 5 is a view from the southeast corner of the IVS project site west of Dunaway Road, and is representative of foreground views from I-8 and Evan Hewes Highway. Figure 3-11 depicts the existing view from KOP 5. The view is quite similar to that from KOPs 1 and 2, also facing west. The visual foreground and middle-ground consist of relatively intact desert floor, characterized by light tan soils and sparse, nondescript tan to greenish scrub, grass and other low-growing vegetation. Hills and ridges of the Jacumba and Coyote Mountains, including Carrizo Mountain to the northwest, are vivid features, strongly enhancing an otherwise fairly featureless landscape and elevating visual quality for westward travelers. Some low-rolling topography

characteristic of washes in the Yuha Desert is visible in this view. Transmission towers of the existing Southwest Powerlink transmission line are visible in this KOP, ranging from visually subordinate to dominant according to distance.

- **Viewer Concern:** As from KOP 4, viewer concern at this KOP is considered moderately high, due to an elevated level of concern with scenic values presumed in the CDCA in general, and a relatively high proportion of motorists on I-8 concerned with those scenic values.

- **Viewer Exposure:** Viewer exposure in this KOP is extremely high; views are predominantly open and unobstructed over a vast area, and the project site is visible at immediate foreground distance with terrain level or oriented toward the viewer.

Overall, the visual sensitivity of this KOP is considered to be moderately high.

Yuha Desert/Yuha Basin (Scenic Quality Rating Units 2 and 3) – Key Observation Points 6, 7, 8

No KOPs were addressed in other adjoining landscape units such as the Jacumba Mountains Wilderness, Coyote Mountains Wilderness, Painted Gorge, or Yuha Basin. The first three areas are largely at background distances and would appear similar in character to the view in KOP 4. The relatively high viewer concern and open, unobstructed viewer exposure would be greatly moderated by distance, which would inherently reduce the dominance of the project site to visually subordinate levels from these locations.

Parts of the Yuha Basin landscape unit (SQRU 3), however, are much closer to the project site, with some parts only a little over 1 mi from the site. This unit includes a designated travel route (Route 274) identified by the BLM and the NPS as part of the historic Anza Trail, and many of the most-visited destinations in the Yuha Desert ACEC, including the Yuha Geoglyphs, Yuha Shell Beds, Yuha Well, distinctive and scenic topography of the Yuha Basin and Buttes, and several designated campgrounds. Because this part of the ACEC is among the most popular destinations in the El Centro BLM Field Office area, is more scenic than any other part of the Yuha Desert, and lies at points within near-middle-ground distance of the project site, additional KOPs were identified in this landscape unit for analysis. The principal sensitive viewpoint in the ACEC in relation to the project site is Route 274 and the geoglyphs and campgrounds along that road. Route 274 is essentially at or near the boundary between SQRUs 2 and 3, with its overall visual quality determined predominantly by scenic attributes associated with SQRU 3. The view from Route 274 and other designated routes in the vicinity are characterized by great visual variety and interest, with a diversity of distinctive land forms including the Mud Hills, Yuha

Buttes, highly dissected washes, and distinctive expanses of desert pavement, which are often virtually devoid of vegetation.

KOP 6 is a view from the eastern segment of Route 274 near Dunaway Campground at a distance of 0.5 mi from the project site. Figure 3-12 depicts the existing view from KOP 6.

KOP 7 is a view from Overlook Campground on Route 274 at a distance of roughly 1 mi from the project site. Figure 3-13 depicts the existing view from KOP 7.

KOP 8 is a view from the vicinity of the Yuha Geoglyphs, also on Route 274, at a distance roughly 3 mi from the project site. Figure 3-14 depicts the existing view from KOP 8.

- **Visual Quality:** The visual quality of these KOPs is considered to be moderately high, consistent with the Michael Clayton Associates 2008 inventory rating of Scenic Class B given to SQRU 3.
- **Viewer Concern:** The viewer concern at these KOPs is also considered to be high, due to the historic and scenic significance of both the route and surroundings, reflected in part in the area's ACEC status.
- **Viewer Exposure:** The viewer exposure along Route 274 varies with topography and distance, but the project site is prominently visible from much of Route 274 and its associated attractions, at distances of as little as 0.5 mi, and is thus high.

Overall, the visual sensitivity of these KOPs is considered to be high.

3.17 Hydrology, Water Use, and Water Quality

3.17.1 Topography

The Imperial Valley Solar (IVS) project site is in the Yuha Desert in the southwest corner of Imperial County approximately 18 miles (mi) west of the city of El Centro. The site consists of undeveloped desert land with sparse vegetation crossed by numerous well-defined dry wash drainages. The Yuha Desert, part of the larger Sonoran Desert, is one of the hottest deserts in North America, with very sparse rainfall.

The IVS project site is on a north-sloping alluvial surface with ground elevations ranging from approximately 320 feet (ft) above mean sea level (amsl) along the south boundary of the west half of the site (in the area where Phase 1 would be constructed), to approximately 40 ft amsl at the east boundary (in the area where Phase 2 would be constructed). The proposed laydown area east of the IVS project site is approximately 10 ft amsl. The site topography is gently rolling to relatively flat, with more pronounced slopes and canyons in the west half of the site, roughly corresponding to the Phase I area. Canyons in the west part of the site are generally not more than 20 to 40 ft deep, with mildly sloping sides. The east part of the site, roughly corresponding to the Phase 2 area, is generally flatter, more uniform, and without the shallow canyons found on the west half of the site.

The area surrounding the project site is desert similar to the project site. To the east, the ground slopes away, dropping below sea level, to the irrigated agricultural area of the Imperial Valley approximately 2.5 mi east of the IVS project site boundary. This agricultural area extends east to a point approximately 30 mi east of the IVS project site. The areas to the north, west, and south of the IVS site are desert extending beyond the Mexican border 15 mi to the south, north to the Salton Sea roughly 25 mi, and 15 mi west to the foothills of the Peninsular Mountain Range.

The Westside Main Canal is at the edge of the agricultural area 2.5 mi east of the IVS project site. This irrigation supply canal, operated by the Imperial Irrigation District (IID), receives water from the All-American Canal and distributes it north to smaller irrigation canals within the system. Further east, approximately 7 mi from the IVS project site, is the New River, flowing north from Mexico to the Salton Sea. Coyote Wash, a large, dry desert wash, runs southwest to northeast roughly parallel to and north of the IVS site and about 1 mi from the IVS site.

3.17.2 Soils

With the exception of approximately the easternmost 300 acres (ac) of Phase II, the laydown area, and part of the transmission line and water line, the soils on the IVS site are classified by the Natural Resource Conservation Service (NRCS) as Rositas-Carrizo-Orita soils. Soils in the eastern 300 ac of Phase II, the laydown area, and parts of the water line are classified as Meloland-Vint-Indio or Imperial-Glenbar-Gilman soils, with a small segment of Badland-Beeline-Rillito soils along the proposed transmission line route. Table 3-26 summarizes selected characteristics of these soils.

Rositas-Carrizo-Orita soils are sandy to gravelly loam in texture, highly permeable, with high potential for wind erosion. They typically form on alluvial fans, floodplains and alluvial basin floors. These soils are highly susceptible to wind erosion. As shown in Table 3-26, the erosion factor (K) in these soils is relatively low, indicating a low potential for erosion-related soil loss. However, because this factor also takes into account total runoff, which is low in this area, a low K value does not necessarily indicate the soils are resistant to erosion in the event of runoff. These soils are typically sandy and can contain fine sands which are very susceptible to erosion. Nonetheless, the runoff potential in these soils is relatively low due to high permeability.

Meloland-Vint-Indio soils are formed in recent mixed alluvium on floodplains and alluvial basin floors. They consist of sand, sandy loam, or silt loam materials. These soils are moderately permeable and moderately susceptible to wind erosion. The erosion factor is high and the runoff potential is low to moderate.

Badland soils are steep to very steep barren land soils dissected by drainages in local steep topography. Consistency is clay to gravelly sand. Surface runoff is rapid or very rapid and the hazard of erosion is high.

Imperial-Glenbar-Gilman soils are the soils of the adjacent agricultural area of Imperial County. Wind erosion potential is moderate with high runoff erosion potential. Permeability is relatively low. These soils are highly productive for farmland. Glenbar and Gilman soils have been listed by the California Department of Conservation as meeting the criteria for prime farmland. Imperial soils are designated by the same agency as meeting the criteria for farmland of statewide importance.

Soil characteristics indicate that approximately the western 80% of the solar field site is susceptible to wind erosion, with highly permeable soils that produce relatively low amounts of annual soil loss erosion, but could be highly erodible locally during flood events. The eastern 20% of the solar field site is moderately permeable, moderately subject to wind erosion and moderately susceptible to runoff erosion. The proposed water pipeline and transmission line traverse similar soils, with the pipeline crossing high-quality farmland soils.

Table 3-26 Summary of Soil Characteristics

Soil	Texture	Depth of Surface Layer, inches	Land Capability Class (Table Note 1)	Wind Erodibility Group (Table Note 2)	Erosion (K) Factor (Table Note 3)	Erosion Hazard: Roads & Trails (Table Note 4)	Permeability, inches/hr (Table Note 5)
Rositas-Carrizo-Orita	Gravelly loam, sandy loam	11	7	3	0.15	Slight	6.0–20.0
Meloland-Vint-Indio	Loam, silt loam, sandy loam	11	7	4L	0.43	Slight	0.6–6.0
Badland-Beeline-Rillito	Ranges from clay to gravelly sand; fine textures predominate	12	8	8	0.15	Severe	N/A
Imperial-Glenbar-Gilman5	Silty clay loam to clay loam	12–13	See Report Text	4–4L	0.37–0.43	See Report Text	0.2–2.0

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Note 1: Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat. Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Table Note 2: Wind erodibility groups range from 1 to 8, with 1 being highly erodible and 8 having low erodibility. L denotes calcareous soil.

Table Note 3: This is an index of erodibility for standard condition and includes susceptibility of soil to erosion and rate of runoff. Low K values (below 0.15) indicate low erosion potential. High K values (above 0.4) are highly erodible. See report text for additional information.

Table Note 4: Qualitative descriptors of erosion hazard: Slight = little or no erosion is anticipated, Moderate = some erosion anticipated, Severe = adverse erosion potential exists.

Table Note 5: Data Source: Soil Survey of Imperial County California Imperial Valley Area. United States Department of Agriculture Soil Conservation Service (1981) (The Soil Conservation Service is now called the Natural Resources Conservation Service).

Table Key: N/A = not applicable or not available.

3.17.3 Climate

The climate of the area around the IVS project site vicinity is hot during summer, with temperatures commonly above 100 degrees, and moderate during winter with temperatures in the 40 to 70 degree range. Based on information from the Western Regional Climate Center (WRCC) for El Centro, approximately 18 mi east of the project site (based on data for the period of record from 1932 to 2009), the warmest month is July with an average maximum temperature of 108 degrees Fahrenheit. Average maximum temperatures exceed 100 degrees for June, July, August, and September. The coldest month is December with an average minimum temperature of 40 degrees.

Precipitation in this area is very sparse. Annual average precipitation at El Centro (WRCC data) is 2.65 inches (in). Rainfall primarily occurs December to March as widespread winter storms. Approximately 53 percent of the total yearly rainfall occurs during those months. Summer monsoon storms generally occur from August to October, when approximately 34 percent of the total yearly rainfall occurs. There is very little precipitation during the months of April to July (about 6 percent of the yearly total). The wettest month of the year is December with an average rainfall of 0.42 in.

3.17.4 Hydrology

The IVS site is in the Imperial Subregion under the jurisdiction of the Colorado River Regional Water Quality Control Board (RWQCB). There are no perennial or intermittent drainages on the site. The closest perennial drainage to the IVS project site is the New River, which was created in the early 1900s when the Colorado River overflowed a dike and, with the Alamo River further east, flowed through the Imperial Valley to form the Salton Sea. Currently, the highly polluted New River obtains its flow primarily from agricultural irrigation return.

Numerous ephemeral streams traverse the IVS project site from the south to north in the west part of the site and toward the northeast in the east half of the site. The headwaters for these streams are gently sloping upland areas south and west of the IVS project site. Culverts under Interstate 8 (I-8) allow flows from south of the freeway to flow across the freeway and onto the IVS project site.

The ephemeral streams on the IVS project site are normally dry. They contain water only infrequently following precipitation events large enough to produce runoff. Rainfall is scant in this area so long periods of time may occur between runoff events. When it does occur, runoff is generally activated by intense summer monsoon rains that produce short-duration flash flooding that can have high flow peaks. Winter storms, although producing more rain on average than the summer monsoons, are widespread and low-intensity, and produce little runoff except on

watersheds much larger than those affecting the project site. Although the majority of the rainfall occurs during winter, the majority of annual runoff typically occurs during the summer months of July to September.

Figure 3-15 shows the location, watershed areas, and estimated 100-year peak discharges of 12 ephemeral streams entering the IVS project site from the south. Stream flow estimates were made for these watersheds using a rainfall/runoff model. That model uses rainfall estimates (2.62 in over a 6 hour period for a 100-year event), soil type, and area and topographic information to estimate peak runoff. Watershed areas for the ephemeral streams shown on Figure 3-15 range from 58 to 1,574 acres (ac), averaging 548 ac. The estimated 100-year discharges range from 57 to 777 cubic feet per second (cfs).

The 100-year discharge represents the discharge from a flood event with an annual probability of occurrence of 1 percent. Commonly called the 100-year flood, a flood of this magnitude is expected to occur, on average, once every 100 years. Because there is a 1 percent chance of this flood occurring every year, it is possible for more, or fewer, than one flood of this magnitude to occur in a 100 year period. The 100-year flood has been designated by the Federal Emergency Management Agency (FEMA) as the national regulatory flood for flood insurance and floodplain management purposes.

As the ephemeral streams pass through the project site, some combine and new watersheds form. Figure 3-15 shows the location, watershed areas, and 100-year peak discharges for 9 ephemeral streams exiting the IVS project site toward the north and east. The watersheds for these ephemeral streams range from 147 to 18,856 ac in area, averaging 3,246 ac. The 100 year discharge for these watersheds ranges from 126 to 4,223 cfs.

Discharges for more frequent floods were determined. The 25-year peak discharges, with a 4 percent chance of occurring in any given year, are roughly 50 percent of the 100-year peaks shown in Figure 3-15. The 10-year discharges, with a 10 percent chance of occurring per year, are roughly 30 percent of the 100-year peaks. The 5-year discharges, with a 20 percent chance of occurring per year, are roughly 15 to 20 percent of the 100-year peaks.

Flows exiting the IVS project site on the north in the Phase I area are returned to the site at a point east of Plaster City, where they join other on-site flow in the Phase II area. All Phase II flows eventually exit the IVS project site on the east, overtop Dunaway Road, and make their way to the Westside Main Canal. This canal south of Plaster City consolidates flows from much of the eastern part of the IVS project site and is mapped as a FEMA floodplain. Flows of sufficient volume and discharge to cross the canal are conveyed north through the Westside Main Canal, north and east through local drainage and irrigation ditches, or overland east to the

New River to eventually flow into in the Salton Sea. It is likely that most flows would infiltrate the soil prior to reaching the New River or the Salton Sea.

3.17.5 Flooding

Flooding, for this analysis was considered to be that area of a channel or area adjacent to a channel that is subject to inundation by channel flows. Flooding can occur anywhere there is a natural drainage on the IVS project site.

FEMA prepares 100 year flood maps for flood insurance purposes and for floodplain management use by local agencies. FEMA map panels 06025C-1650C and 06025C-1675C cover the IVS project site. Two watercourses, corresponding to E2 to Dunaway and C North on Figure 3-15 have been mapped by FEMA as Zone A, which means a 100-year flood zone with no base flood levels determined. These are considered approximate flood zones. Figure 3-16 shows the location of the FEMA-mapped floodplain on the IVS project site.

FEMA maps do not cover all floodplains. Rural areas, such as the IVS project site, are commonly not mapped. Floodplain mapping based on the discharges shown in Figure 3-15 were developed as shown on Figure 3-17. That flood mapping shows floodplains associated with 24 drainages and one sink area (Basin D Lake) on the IVS project site.

3.17.6 Groundwater

The IVS project site lies primarily over the Coyote Wells Valley Groundwater Basin. This 100-square-mile basin is bounded on the north by the Coyote Mountains and the Elsinore fault zone, on the west and southwest by the Jacumba Mountains, on the southeast by the United States-Mexico border (which is a jurisdictional boundary; the basin does extend south into Mexico), and by the Imperial Valley Groundwater Basin on the east.

The boundary between the Coyote Wells Valley and Imperial Valley Groundwater Basins begins near the intersection of I-8 and the existing San Diego Gas and Electric (SDG&E) Southwest Powerlink Transmission line at the southeast part of the IVS project site, and extends north-northeast through the IVS project site. The easternmost part of the Phase II area, the easternmost 7.5 mi of the transmission line, the easternmost 3.2 mi of the waterline, and the laydown area are over the Imperial Valley Groundwater Basin. The rest of the IVS project site is over the Coyote Wells Valley Groundwater Basin.

The Coyote Wells Valley Groundwater Basin, with storage capacity of approximately 1.7 million acre-feet (af), lies primarily within Holocene alluvium 100 to 300 ft below the ground surface,

although unconsolidated alluvium extends to a depth of 650 ft. This basin receives recharge from the percolation from ephemeral runoff from the surrounding mountains. Groundwater levels have been declining due to pumping and underflow to the Imperial Valley Groundwater Basin and to Mexico. Groundwater quality is characterized by sodium bicarbonate-chloride with high fluoride levels in some areas. Groundwater uses include municipal, irrigation, and domestic uses.

The 1,870 square mile Imperial Valley Groundwater Basin underlies all the agricultural areas in Imperial County south of the Salton Sea from the Sand Hills on the east to the Coyote Wells Valley Groundwater Basin on the west. The total storage capacity is approximately 14 million af. This basin has two major aquifers, with the upper averaging 200 ft in thickness and the lower 380 ft. Recharge is primarily from irrigation return, underflow from adjacent groundwater basins, and seepage from unlined irrigation canals. Some recharge occurs from infiltration of natural stream flow on the West Mesa, on which the IVS project is proposed. Groundwater recharges and inflow are roughly balanced with outflow and pumping, with a net loss of approximately 17,000 af per year. Groundwater quality is variable and generally the water is unsuitable for domestic and irrigation purposes without treatment. High fluoride levels occur in parts of the basin. Uses include municipal, domestic and irrigation.

Geotechnical drilling found groundwater at 45 ft below ground surface (bgs) along Dunaway Road, and at 50 ft bgs near the U.S. Gypsum Property. A test well on the east part of the IVS site in the Imperial Valley Groundwater Basin found groundwater at more than 90 ft bgs. Total dissolved solids (TDS) were very high (20,000 parts per million [ppm]) and groundwater production low.

3.17.7 Water Quality

There are no perennial or intermittent drainages on the IVS project site. Water quality of surface runoff flows would be dependent on materials picked up on the ground surface, which is currently natural desert. The downstream disposition of surface runoff from the site is the desert area west of the Westside Main Canal, possibly the Westside Main Canal itself, local drainage and irrigation ditches west of the Westside Main Canal, the New River, and eventually the Salton Sea.

The New River is highly polluted from agricultural runoff, sewage from Mexico, and discharges from manufacturing plants in Mexico. It is listed as impaired under Section 303(d) of the Clean Water Act for a wide range of pollutants including, but not limited to, trimethylbenzene, chlordane, chloroform, chlorpyifos, copper, dichloro-diphenyl-trichloroethane (DDT), diazinon,

dieldrin, mercury, meta-para xylenes, nutrients, organic enrichment, pesticides, and selenium. The Salton Sea is listed as impaired for nutrients, salinity, and selenium.

The California Regional Water Quality Control Board identifies beneficial uses of waters of the State that may be protected against water quality degradation. These include such uses as domestic, municipal, agricultural, recreation, natural resources, and aesthetic enjoyment. Beneficial uses identified for washes in the west Colorado River basin include groundwater recharge (GWR), non-contact water recreation (RECII), and wildlife habitat (WILD).

Groundwater in the Coyote Wells Valley Groundwater Basin is type sodium bicarbonate-chloride. TDS content ranges from 750 to 1,240 milligrams per liter (mg/L) in shallow wells to 300 to 450 mg/L in deeper wells. Fluoride levels in some wells are as high as 3.5 mg/L.

Imperial Valley Groundwater Basin quality varies extensively throughout the basin. TDS content ranges from 498 to 7,280 mg/L. In general, groundwater beneath the basin is unusable for domestic and irrigation purposes without treatment. TDS values typically exceeding 2,000 mg/L are reported from a limited number of test wells drilled in the west part of the basin. Groundwater in areas of the basin has higher than recommended levels of fluoride and boron. Approximately 7,000 af per year of groundwater is estimated to recharge the basin from the New River which drains the Mexicali Valley. This groundwater is related to surface flow from the highly polluted New River and negatively affects groundwater quality in the basin.

Groundwater beneficial uses in the IVS project area include municipal and domestic supply (MUN) and industrial service supply (IND).

3.17.8 Applicable Regulations, Plans, and Policies/Management Goals

Soil and water resources LORS directly applicable to the IVS proposed project and the surrounding area include Federal, State and local (Imperial County) laws and regulations, as listed in Table 3-27.

Table 3-27 Laws, Ordinances, Regulations, and Standards Related to Soil and Water Resources

Applicable LORS	Description
Federal	
Clean Water Act (33 U.S.C. Section 1251 et seq.)	The Clean Water Act (33 USC § 1257 et seq.) requires states to set standards to protect water quality, which includes regulation of storm water and wastewater discharges during construction and operation of a facility. California established its regulations to comply with the Clean Water Act under the Porter-Cologne Water Quality Control Act of 1967. The Clean Water Act (CWA) establishes protection of waters of the United States such as perennial and ephemeral drainages, streams, washes, ponds, pools, and wetlands through CWA Sections 401 and 404. Section 401 of the CWA requires that any activity which may result in a discharge into waters of the U.S. must be certified by the California State Water Resources Control Board (SWRCB) as administered by the Regional Water Quality Control Boards (RWQCB). This certification ensures that the proposed activity does not violate State and/or Federal water quality standards. The IVS project is within the jurisdictional area of the Colorado River RWQCB. Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (Corps of Engineers) to regulate the discharge of dredged or fill material to the waters of the U.S. and adjacent wetlands. The Corps of Engineers issues individual site-specific or general (Nationwide) permits for such discharges. Section 404 Permits are not granted without prior 401 certification (see above paragraph). Section 303(d) requires states to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs) to improve water quality. Section 311 prohibits the discharge of oil or hazardous materials to waters of the U.S.
State	
California Constitution, Article X, Section 2	This section requires that the water resources of the State be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
The Porter-Cologne Water Quality Control Act of 1967, Water Code Sec 13000 et seq.	The Porter Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the SWRCB) and the nine RWQCBs (specifically the Colorado River RWQCB for the IVS project site) to adopt water quality criteria to protect State waters (Waters of the State), defined in Section 13050 as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Water quality criteria include the identification of beneficial uses, narrative and numerical water quality standards, and

Applicable LORS	Description
	implementation procedures. Section 13260 sets reporting requirements for waste discharge to waters of the State. Section 13263 authorizes the RWQCBs to issue Waste Discharge Requirements specifying conditions for protection of water quality. Section 13181 of the act requires the SWRCB to develop water quality reports and lists required under Section 303(d) of the Federal Clean Water Act.
State Water Resources Control Board WQO 99 08	The SWRCB regulates storm water discharges associated with construction projects affecting areas 1 acre or larger to protect state waters. Under Order 99 08, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity for which applicants can qualify if they meet the criteria and upon preparing and implementing an acceptable Storm Water Pollution Prevention Plan (SWPPP) and notifying the SWRCB with a Notice of Intent. A new General Permit is proposed to become effective July 1, 2010. This new permit would modify compliance and notification requirements based in part upon a water quality risk level assessment for each site.
State Water Resources Control Board WQO 2003 0003 – DWQ	This general permit applies to the discharge of water to land that has a low threat to water quality. Categories of low threat discharges include water storage tank flushing and testing.
California Code of Regulations, Title 17	Requires prevention measures for backflow and cross connections of potable and non-potable water lines.
California Code of Regulations, Title 22	Title 22, Division 4, Chapter 15 regulates the quality and use of recycled water and specifies Primary and Secondary Drinking Water Standards in terms of Maximum Contaminant Levels.
California Code of Regulations, Title 23	Title 23, Division 3, Chapter 15 applies to waste discharges to land and requires the Regional Board issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
Title 27, California Code of Regulations Division 2. Section 20375	Title 27 regulates and gives design requirements for surface impoundments used for waste management.
California Plumbing Code. California Code of Regulations Title 24, Part 5	This part of the California Plumbing Code relates to private sewage disposal systems. Regulates septic tank capacity, disposal fields and seepage pits, Requires: (a) septic tank and disposal field system where groundwater is within 12 feet of the ground surface; (b) disposal systems shall not be located in flood hazard areas; (c) additional systems be installed if the original system is unable to absorb all of the sewage; and, (d) leach lines must be more than 5 feet above groundwater (10 feet if groundwater is degraded).
State Water Board Resolution No. 68 16	Resolution No. 68 16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings or facts.
California Water Code Section 1211	Section 1211 of the Water Code requires that before making a change in the point of discharge, place of use, or purpose of use of treated wastewater, the owner of the treatment plant must seek approval from the Division of Water Rights, which is accomplished by filing a Petition for Change for Owners of Waste Water Treatment Plants (Petition for Change).

Applicable LORS	Description
Local	
Imperial County Land Use Ordinance, Title 9	Division 16 is the flood damage prevention regulation. Restricts floodplain uses, requires that floodplain uses be protected against flood damage, controls alteration of floodplains and stream channels, controls filling and grading in floodplains, prevents diversion of flood flows where these would increase flood hazards in other areas. Division 22 is the groundwater ordinance. Intended to preserve, protect and manage groundwater within the county. Division 10 regulates building, sewer and grading. Includes regulations on septic tanks.
State Policies and Guidance	
Water Quality Control Plan Colorado River – Region 7	The Water Quality Control Plan (also known as the Basin Plan) establishes beneficial uses, water quality objectives that protect the beneficial uses of surface water and groundwater, and describes an implementation plan for water quality management in the Colorado River Region. The Basin Plan describes measures designed to ensure compliance with statewide plans and policies and provides comprehensive water quality planning.
Integrated Energy Policy Report (Public Resources Code, Div. 15, Section 25300 et seq.)	In the 2003 Integrated Energy Policy Report, consistent with SWRCB Policy 75 58 and the Warren-Alquist Act, the Energy Commission adopted a policy stating they would approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.”
SWRCB Sources of Drinking Water Policy / Res. No. 88 63	States that all groundwater and surface water of the State are considered to be suitable for municipal or domestic water supply with the exception of those waters that meet specified conditions.
SWRCB Res. No. 2005 0006	Adopts the concept of sustainability as a core value for State Water Board programs and directs its incorporation in all future policies, guidelines, and regulatory actions.
SWRCB Res. No. 2008 0030	Requires sustainable water resources management such as low impact development (LID) and climate change considerations (all future policies, guidelines, and regulatory actions. Directs Regional Water Boards to “aggressively promote measures such as recycled water, conservation and LID Best Management Practices where appropriate and work with Dischargers to ensure proposed compliance documents include appropriate, sustainable water management strategies.”
California Water Code Section 13523	Requires that a RWQCB shall prescribe water reuse requirements for water, which is to be used or proposed to be used as recycled water after consultation with and upon receipt of recommendations from the State Department of Public Health, and if it determines such action to be necessary to protect the public health, safety, or welfare.

Applicable LORS	Description
The California Safe Drinking Water and Toxic Enforcement Act	The California Health & Safety Code Section 25249.5 et seq. prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The RWQCB administers the requirements of the Act.
Local Policies and Guidance	
County of Imperial Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans Within Imperial County	Provides drainage design standards for development within Imperial County. These include: • Retention volume of 3 inches rainfall with no assumed infiltration or evaporation for development impervious areas. Retention basins are to empty within 72 hours after receiving water. • Finished pad elevations for buildings shall be at or above the 100 year flood elevation. Finished floors shall be 6 inches above the 100 year flood. • Drainage report required for all developments.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Chapter 4
Environmental Consequences

4.1 Introduction and Overview of Section

This chapter analyzes the potential environmental consequences or impacts as a result of the Agency Preferred Alternative, the Imperial Valley Solar (IVS) project, the other Build Alternatives, and the three No Action Alternatives. These analyses consider both short-term impacts during construction and decommissioning, and long-term impacts during operations. The scope of the impact analyses presented in this chapter is commensurate with the level of detail for the alternatives provided in Chapter 2, Alternatives Including the Proposed Action, and the availability and/or quality of data necessary to assess impacts. Existing conditions on and in the vicinity of the project site, as described in Chapter 3, Affected Environment, were used as the baseline conditions for assessing the potential environmental impacts of the alternatives.

4.1.1 Impact Analysis Methodology

The impact assessment that follows focuses on the general impacts that could occur as a result of implementing each of the alternatives. The methodology for this assessment conforms with the guidance found in the following sections of the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) Section 1502.24: Methodology and Scientific Accuracy, 40 CFR Section 1508.7: Cumulative Impact, and 40 CFR Section 1508.8: Effects.

The CEQ regulations require that agencies "…rigorously explore and objectively evaluate…" the impacts of the alternatives. This section describes the impact assessment methodologies; defines the resources; identifies applicable regulations, plans, and policies/management goals; discusses short- and long-term and cumulative impacts; identifies mitigation and measures to address adverse impacts; and summarizes the unavoidable adverse impacts for each environmental parameter. This section also discusses irreversible and irretrievable commitments of resources, growth inducing impacts, and short-term versus long-term productivity of the environment.

4.1.2 Terminology Used

Terms referring to the intensity, scope (geographic extent), and duration of impacts are used in this chapter. Impacts are not necessarily negative; some are positive benefits and are identified as such. The following terminology is used in the impacts analysis:

- **Adverse:** The effect is negative to a particular resource or a number of resources.
- **Beneficial:** The effect is positive to a particular resource or a number of resources.
- **Cumulative:** The cumulative effects that result from individually minor but collectively significant actions taking place over a period of time.
- **Short-term:** The effect occurs only for a short time after implementation of a management action. For example, construction noise impacts from construction activities would be considered short-term.
- **Long-term:** The effect occurs for an extended period after implementation of a management action. Operational noise during power plant operations would be a long-term impact, as it would last as long as the plant is in operation.

4.1.3 Mitigation Measures

For the adverse impacts identified in the resource discussions in the individual sections in the chapter, mitigation measures were developed that would be implemented during all appropriate phases of the project from initial ground breaking, construction, operations, and through closure and decommissioning. The mitigation measures include measures proposed by the applicant; Conditions of Certification (COCs) proposed by the California Energy Commission; and regulatory requirements of other federal, state, and local agencies. The measures will also include terms and conditions from the Biological Opinion (BO) when the BO for the project is issued by the United States Fish and Wildlife Service (USFWS) and additional BLM-proposed mitigation measures and standard right-of-way (ROW) grant terms and conditions.

These requirements are referred to generically as “Mitigation Measures” throughout this Final Environmental Impact Statement (FEIS). Because these Mitigation Measures are derived from a variety of sources, they also are required, and their implementation is regulated, by various agencies. For instance, the Mitigation Measures proposed by the applicant have been accepted by the BLM and the CEC and have been incorporated into the project description. This, in turn, is the project description that has been presented to the USFWS for consultation and is the

project description upon which the terms and conditions of the Biological Opinion (BO) will be based. The project applicant will be required to comply with the terms and conditions of the BO.

Some of the Mitigation Measures are required by agencies other than the BLM and their implementation will be enforced by those other agencies against the project applicant. For instance, many of the air quality measures will be enforced by the Imperil County Air Pollution Control District (ICAPCD). The project applicant will be required by the Record of Decision (ROD) and the ROW grant to comply with the requirements of those other agencies (see, e.g., 43 Code of Federal Regulations [CFR] 2805.12(a) Federal and State Laws and Regulations), (i)(6) (more stringent state standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the ROW). Any non-compliance with implementation of these other Federal or state requirements may impact the approval status of the ROD and ROW grant.

As noted above, the BLM recognizes that the CEC Energy Commission COCs are not generally within the enforcement authority of the BLM because those COCs are requirements originating in State laws and regulations. While the project applicant must comply with these measures, they are not directly enforceable by the BLM except in the general sense referred to above. For those COCs that are also within the enforcement authority of the BLM because of overlapping authorities, the BLM incorporates those COCs into its ROW grant as its own terms and conditions subject to its enforcement authority. Table 4-1 contains a list of COCs and denotes those measures that will be monitored and managed by the CEC, and those that will be subject to joint administration between the BLM and CEC.

In some instances, the BLM identified potential mitigation measures for impacts to public land resources that would not be, and have not been, identified as mitigation measures required by these other agencies. In these instances, individual mitigation measures have been developed by the BLM, which will be incorporated into the ROW grant and will be monitored and managed solely by the BLM. In addition, standard terms and conditions for approval of the use of public land will be identified in the ROD and incorporated into the ROW grant and, therefore, will be enforced by the BLM as part of any ROW grant approved for the project.

4.1.4 Due Diligence and Bonding Requirements

If approved, the solar energy ROW authorization will include diligent development terms and conditions, consistent with the requirements of 43 CFR 2805.12(i)(5). Failure of the holder to comply with the diligent development terms and conditions provides the BLM Authorized Officer the authority to suspend or terminate the authorization (43 CFR 2807.17).

Table 4-1 Summary of California Energy Commission Conditions of Certification and Bureau of Land Management Monitoring

Condition	Summary	CEC	BLM	Comment
Air Quality				
Exhaust Emissions Control	Follow exhaust emissions control standards for construction equipment	X		Component of monitoring to be managed by the California Energy Commission (CEC)
Fugitive Dust Control	Follow fugitive dust control standards during construction	X		Component of monitoring to be managed by CEC
Emergency Generator	Best available control technology requirements for emergency generator engine during operations	X		Component of monitoring to be managed by CEC
Gasoline Tank	Requirements for gasoline storage tank on-site during operations	X		Component of monitoring to be managed by CEC
Operational and Maintenance Vehicles	Vehicle standards during operations	X		Component of monitoring to be managed by CEC
AQ-SC1	Designate an Air Quality Construction Mitigation Manager	X		Component of monitoring to be managed by CEC
AQ-SC2	Develop an Air Quality Construction Mitigation Plan	X		Component of monitoring to be managed by CEC
AQ-SC3	Fugitive Dust Control Plan for Construction	X		Component of monitoring to be managed by CEC
AQ-SC4	Monitoring and response to dust plumes	X		Component of monitoring to be managed by CEC
AQ-SC5	Diesel-fueled engine control	X		CEC-specific requirement
AQ-SC6	New model year vehicles for maintenance and mirror washing	X		CEC-specific requirement
AQ-SC7	Fugitive Dust Control Plan for Operations	X		Component of monitoring to be managed by CEC
AQ-SC8	Provide copies of ATC and PTO	X		CEC-specific requirement
AQ-SC9	Follow emissions standards for emergency generator and fire pump engines	X		CEC-specific requirement
AQ-SC10	Gasoline tank and appurtenances vapor recovery and standing loss requirements	X		Component of monitoring to be managed by CEC
Biological Resources				
BIO-1	Designated Biologist selection and qualifications	X		Component of monitoring to be managed by CEC
BIO-2	Designated Biologist duties	X		Component of monitoring to be managed by CEC

Condition	Summary	CEC	BLM	Comment
BIO-3	Biological Monitor selection and qualifications	X		Component of monitoring to be managed by CEC
BIO-4	Biological Monitor duties	X		Component of monitoring to be managed by CEC
BIO-5	Designated Biologist and Biological Monitor authorities	X		Component of monitoring to be managed by CEC
BIO-6	Worker Environmental Awareness Program	X		Component of monitoring to be managed by CEC
BIO-7	Biological Resources Mitigation Implementation and Monitoring Plan	X		Component of monitoring to be managed by CEC
BIO-8	General biological impact avoidance and mitigation measures	X		Component of monitoring to be managed by CEC
BIO-9	FTHL impact avoidance and mitigation measures	X	X	
BIO-10	FTHL compensation lands	X	X	
BIO-11	Provision of access to project site and mitigation by project owner and CEC, BLM, CDFG, USFWS, and Corps to verify compliance and effectiveness of mitigation measures	X	X	
BIO-12	Raven Management Plan	X	X	
BIO-13	Exclusionary fencing and covering on and around the evaporation ponds	X	X	
BIO-14	Pre-construction nest surveys	X		Component of monitoring to be managed by CEC
BIO-15	Pre-construction surveys for American badgers and desert kit fox	X		Component of monitoring to be managed by CEC
BIO-16	Burrowing owl impact avoidance and minimization measures	X		Component of monitoring to be managed by CEC
BIO-17	Jurisdictional streambed and waters of the U.S. impact minimization and compensation measures	X		Other state regulation (CDFG and Corps)
BIO-18	Noxious Weed Management Plan	X	X	
BIO-19	Provide information on special-status plant species and conduct surveys as directed by BLM		X	
BIO-20	Decommissioning and Reclamation Plan	X	X	
Climate Change				
None	Not applicable	--	--	--

Condition	Summary	CEC	BLM	Comment
Cultural and Paleontological Resources				
CUP-1	Identify and evaluate cultural resources in Area of Potential Effects	X	X	
CUP-2	Avoid and protect potentially significant cultural resources	X	X	
CUP-3	Develop and implement Historic Properties Treatment Plan(s)	X	X	
CUP-4	Conduct data recovery or other actions to resolve adverse effects	X	X	
CUP-5	Monitor construction at known environmentally sensitive areas	X	X	
CUP-6	Train construction personnel	X	X	
CUP-7	Properly treat human remains	X	X	
CUP-8	Monitor construction in areas of high sensitivity for buried resources	X	X	
CUP-9	Continue consultation with Native American and other traditional groups		X	
CUP-10	Protect and monitor National Register- and/or California Register-eligible properties	X	X	
CUP-11	Complete identification efforts for the Anza Trail and coordinate mitigation efforts		X	
PAL-1	Designate PRS and Monitors	X		Component of monitoring to be managed by CEC
PAL-2	Provide maps and drawings to the PRS	X		Component of monitoring to be managed by CEC
PAL-3	Develop PRMMP if directed by PRS	X		Component of monitoring to be managed by CEC
PAL-4	Worker Environmental Awareness Program, and conduct weekly training, if required by PRS	X		Component of monitoring to be managed by CEC
PAL-5	Monitor in areas on grading, excavation, trenching, and augering	X		Component of monitoring to be managed by CEC
PAL-6	Collect fossil materials in accordance with the PRMMP	X		Component of monitoring to be managed by CEC
PAL-7	Develop Final Paleontological Resources Report	X		Component of monitoring to be managed by CEC

Condition	Summary	CEC	BLM	Comment
Fire and Fuels Management				
WORKER SAFETY-1	Submittal of Construction Safety and Health Program	X	X	
WORKER SAFETY-1	Submittal of Operations and Maintenance Safety and Health Program	X	X	
Geology, Soils, Topography, Mineral Resources, and Seismic				
GEO-1	Comply with the most current California Building Code standards in the design and construction of the project	X	X	
GEO-2	Submittal of erosion and sedimentation control plan, soils, geotechnical, or foundation reports, grading plan, and design of proposed drainage structures.	X	X	
Grazing, and Wild Horses and Burros				
None	Not applicable	--	--	--
Land Use and Corridor Analysis				
None	Not applicable	--	--	--
Noise and Vibration				
NOISE-1	Notify residents within 2 miles of the of the commencement of construction	X		Component of monitoring to be managed by CEC
NOISE-2	Noise Complaint Process	X		Component of monitoring to be managed by CEC
NOISE-3	Noise Control Program and Statement	X		Component of monitoring to be managed by CEC
NOISE-4	Noise level restrictions and survey	X		Component of monitoring to be managed by CEC
NOISE-5	Noise Hazard Surveys	X		Component of monitoring to be managed by CEC
NOISE-6	Construction time restrictions	X		Component of monitoring to be managed by CEC
Public Health and Safety, and Hazardous Materials				
None	Not applicable	--	--	--
Recreation				
REC-1	Develop a Comprehensive Interpretive Plan for the Anza Trail		X	

Condition	Summary	CEC	BLM	Comment
Socioeconomics and Environmental Justice				
None	Not applicable	--	--	--
Special Designations				
None	Not applicable	--	--	--
Traffic and Transportation				
TRANS-1	Construction Traffic Control Plan	X		Component of monitoring to be managed by CEC
TRANS-2	Authority to construct from the railroad for the railroad crossing	X		Component of monitoring to be managed by CEC
TRANS-3	Repair damaged public road rights-of-way	X		Component of monitoring to be managed by CEC
TRANS-4	SunCatcher Mirror Positioning Plan and monitoring	X		Component of monitoring to be managed by CEC
Visual Resources				
VIS-1	Surface treatment of project structures and buildings	X		Component of monitoring to be managed by CEC
VIS-2	Temporary and permanent exterior lighting	X		Component of monitoring to be managed by CEC
VIS-3	Realignment of proposed transmission interconnection	X		Component of monitoring to be managed by CEC
VIS-4	Setback of SunCatchers from Interstate 8	X		Component of monitoring to be managed by CEC
VIS-5	Contribute funds to the BLM and NPS to provide improvements to benefit visitors on the Anza Trail	X		Component of monitoring to be managed by CEC
VIS-6	Reflective glare mitigation	X		Component of monitoring to be managed by CEC
VIS-7	Setback and revegetation of staging areas	X		Component of monitoring to be managed by CEC
Hydrology, Water Use, and Water Quality				
SOIL&WATER-1	Drainage, Erosion, and Sedimentation Control Plan	X		Other State regulation (Water Board)
SOIL&WATER-2	Monitoring and verification of water use	X	X	
SOIL&WATER-3	Industrial Facility SWPPP	X		Other State regulation (Water Board)
SOIL&WATER-4	Potable water requirements	X	X	
SOIL&WATER-5	NPDES General Permit for Construction Activity	X		Other State regulation (Water Board)
SOIL&WATER-6	Waste Discharge Requirements	X		Other State regulation (Water Board)
SOIL&WATER-7	Storm Water Damage Monitoring and Response Plan	X	X	
SOIL&WATER-8	Septic system and leach field requirements	X		Other State regulation (Water Board)

Condition	Summary	CEC	BLM	Comment
SOIL&WATER-9	Assured water supply	X		Other State regulation (Water Board)
SOIL&WATER-10	Decommissioning Plan	X	X	

Table Source: United States Bureau of Land Management and LSA Associates, Inc. (2010).

Table Key: Anza Trail = Juan Bautista de Anza National Historic Trail; ATC = Authority-to-Construct; BLM = United States Bureau of Land Management; California Register = California Register of Historical Resources; CDFG = California Department of Fish and Game; CEC = California Energy Commission; Corps = United States Army Corps of Engineers; FTHL = flat-tailed horned lizard; National Register = National Register of Historic Places; NPDES = National Pollutant Discharge Elimination System; NPS = National Park Service; PRMMP = Paleontological Resources Monitoring and Mitigation Plan; PRS = Paleontological Resources Specialist; PTO = Permit-to-Operate; SWPPP = Storm Water Pollution Prevention Plan; USFWS = United States Fish and Wildlife Service.

If approved, the solar energy ROW authorization will 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 will consist of three components that address:

- Hazardous materials;
- Decommissioning and removal of improvements and facilities; and
- Reclamation, revegetation, restoration, and soil stabilization.

4.1.5 Terms and Conditions Found in the Federal Land Policy and Management Act and Bureau of Land Management Regulations

Title V of the Federal Land Policy and Management Act (FLPMA) of 1976 addresses the issuance of ROW authorizations on public land. BLM has identified all the lands that will be occupied by facilities associated with the Imperial Valley Solar (IVS) project that are needed for construction, operation, and maintenance of the project. The general terms and conditions for all public land rights-of-way are described in Section 505 of FLPMA, and include measures to minimize damage and otherwise protect the environment; require compliance with air and water quality standards, and with more stringent state standards for public health and safety; environmental protection; siting; construction; operation; and maintenance of ROWs. The United States Secretary of the Interior may prescribe additional terms and conditions as he or she deems necessary to protect Federal property, provide for efficient management, and among other things, generally protect the public interest in the public lands subject to or lands adjacent thereto.

For the IVS project, terms and conditions will be incorporated in the ROW grant that are necessary to protect public safety, including security fencing and on-site personnel. The environmental consequences analysis in this FEIS identifies impacts and mitigation measures to reduce/eliminate adverse environmental impacts of the IVS project. The mitigation measures identified by the BLM and incorporated as terms and conditions of the ROW grant provide those actions necessary to prevent unnecessary or undue degradation of the public lands as required by Section 302 of FLPMA. The additional mitigation measures that are identified and described in this FEIS and that will be enforced by the other agencies, as noted above, provide additional protection to public land resources.

Specifically, the FEIS identifies recommended mitigation measures that would:

(1) Require compliance with ICAPCD regulations to reduced vehicle and equipment emissions, and minimize dust during project construction, operations, and decommissioning;

(2) Require planning and compliance with Federal, State and local agency requirements for drainage, erosion and sediment control, wastewater management, groundwater use and monitoring, and storm water control and monitoring;

(3) Require actions to protect public health and safety including traffic control, transmission line standards, and worker safety plans; and

(4) Require biological and cultural resources mitigation to protect sensitive environmental resources, cause the least damage to the environment, and protect the public interest, while allowing the project to be constructed.

Finally, all BLM ROW grants are approved subject to regulations contained at 43 CFR 2800. Those regulations specify that the BLM may, at any time, change the terms and conditions of a ROW grant "…as a result of changes in legislation, regulations, or as otherwise necessary to protect public health or safety or the environment." (43 CFR 2805.15(e)).

The BLM will monitor conditions and review any ROW grant issued for the IVS project to evaluate if future changes to the grant terms and conditions are necessary or justified under this provision of the regulations to further minimize or reduce impacts resulting from the project.

4.1.6 Incomplete or Unavailable Information

Impacts are quantified where possible. Impacts are sometimes described using ranges of potential impacts or in qualitative terms. In the absence of quantitative data, impacts are described based on the professional judgment of the interdisciplinary team of technical specialists using the best available information. Impact analyses based on incomplete or unavailable information are identified in this chapter where applicable.

4.1.7 Chapter Format

The impact assessment in this chapter discusses the impacts to elements of the human and natural environment from future activities. Each resource impact assessment provides the following information:

- Methodology of the impact analysis
- Definition of the resource
- Applicable regulations, plans and policies/management goals
- Direct and indirect impacts for the Agency Preferred Alternative, the IVS project, the other Build Alternatives, and the No Action Alternatives
- Cumulative impacts
- Mitigation, project design features and other measures
- Unavoidable adverse impacts

In accordance with the CEQ regulations and BLM's NEPA handbook (H-1790-1), Chapter 4 concludes with discussions of the following:

- Irretrievable and irreversible impacts
- Growth-inducing impacts
- Short-term versus long-term productivity of the environment
- Summary of unavoidable adverse impacts

4.2 Air Quality

This section evaluates potential indirect and direct air quality impacts associated with the Imperial Valley Solar (IVS) project and the project alternatives, and identifies mitigation measures recommended for potential adverse impacts.

4.2.1 Methodology

This impact assessment focuses on the general air quality impacts that could occur as a result of implementing Build or No Action Alternatives. The methodology for this assessment conforms with the guidance found in the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) at 40 Code of Federal Regulations (CFR) 1502.24 (Methodology and Scientific Accuracy), 40 CFR 1508.7 (Cumulative Impact), and 40 CFR 1508.8 (Effects).

The CEQ regulations require that agencies rigorously explore and objectively evaluate the impact of the alternatives. Under NEPA, the United States Bureau of Land Management (BLM) considered three regulatory benchmarks in determining whether the IVS project or the project alternatives would result in an adverse air quality impact when evaluated against the baseline air quality conditions in the area. The potential risk of air quality impacts was assessed with respect to the following three regulatory benchmarks:

- The project construction and/or operation emissions would exceed the General Conformity applicability thresholds for Federal nonattainment pollutants.
- The project operations would exceed Prevention of Significant Deterioration (PSD) permit applicability thresholds for Federal attainment pollutants.
- The project would cause, for Federal attainment pollutants, air quality impacts in exceedance of the National Ambient Air Quality Standards (NAAQSs).

If the IVS project or the project alternatives exceed either of the first two regulatory benchmarks, those impacts would be considered potentially adverse and would require a further refined impact and mitigation analysis to demonstrate that the IVS project or the project alternatives would not result in an adverse impact due to an exceedance of the NAAQSs.

4.2.2 Definition of Resource

In accordance with the Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentrations of various pollutants in the atmosphere. The measurement of these criteria pollutants in ambient air are expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography and the prevailing meteorological conditions.

This analysis evaluates the expected air quality impacts from emissions of criteria air pollutants from the construction and operation of the IVS project and the project alternatives. Criteria air pollutants are defined as air contaminants for which the State and/or Federal governments have established ambient air quality standards (AAQSs) to protect public health.

The criteria pollutants analyzed in this section are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), and particulate matter (PM). Two subsets of particulate matter are addressed: inhalable particulate matter (less than 10 microns in diameter [PM_{10}]) and fine particulate matter (less than 2.5 microns in diameter [$PM_{2.5}$]). Nitrogen oxides (NO_X, consisting primarily of nitric oxide [NO] and NO_2) and volatile organic compound (VOC) emissions readily react in the atmosphere as precursors to O_3 and, to a lesser extent, particulate matter. Sulfur oxides (SO_X) readily react in the atmosphere to form particulate matter and are major contributors to acid rain (acid rain is a broad term referring to a mixture of wet and dry deposited material from the atmosphere that contains higher than normal amounts of nitric and sulfuric acids).

Global climate change and greenhouse gas (GHG) emissions are discussed separately in Sections 3.4, Climate Change, and 4.4, Climate Change.

4.2.3 Applicable Regulations, Plans, and Policies/Management Goals

The *California Desert Conservation Area Plan* (CDCA Plan) (BLM, 1980, as amended) provides the following management direction for air quality protection in the region:

- Areas will be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the Clean Air Act Amendments, unless otherwise designated another class by the State of California as a result of recommendations developed by any BLM air quality management plan.

The Federal, State, and local laws, ordinances, regulations, and standards (LORS) applicable to the control of criteria pollutant emissions and mitigation of air quality impacts for the IVS project are summarized in Table 4-2.

Table 4-2 Air Quality Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
40 CFR Part 52	Nonattainment NSR requires a permit and requires BACT and offsets. Permitting and enforcement delegated to ICAPCD. PSD requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The IVS project is a new source that does not have a Rule-listed emission source; therefore, the PSD trigger levels are 250 tpy for NO_X, VOCs, SO_2, $PM_{2.5}$, and CO.
40 CFR Part 60	NSPS, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for compression ignition internal combustion engines, including emergency fire water pump engines.
40 CFR Part 93, General Conformity	Requires determination of conformity with the SIP for projects requiring Federal approvals if project annual emissions are above specified levels.
State	
HSC Section 40910–40930	Permitting of source needs to be consistent with ARB-approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
CCR Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the type of fuels allowed, establishes maximum emission rates, and establishes recordkeeping requirements on stationary compression ignition engines, including emergency fire water pump engines.
Local (ICAPCD)	
ICAPCD Rule 201 – Permits Required	Requires an Authority to Construct before construction of an emission source occurs. Prohibits operation of any equipment that emits or controls air pollutants without first obtaining a permit to operate.
ICAPCD Rule 207 – New and Modified Stationary Source Review	Specifies BACT/offsets technology and requirements for a new emissions unit that has potential to emit any regulated pollutants. Also, specifies ICAPCD participation requirements for power plant projects under the jurisdiction of the California Energy Commission.
ICAPCD Rule 400 – Fuel Burning Equipment – Nitrogen Oxides	Limits the emission levels of NO_X from any source to no more than 140 lbs/hr of NO_X, calculated as NO_2.
ICAPCD Rule 401 – Opacity of Emissions	Limits the opacity of discharges from any single source to less than 20 percent opacity or No. 1 on the Ringlemann Chart.
ICAPCD Rule 403 – General Limitations on the Discharge of Air Contaminants	Limits the concentration of the discharge of air contaminants, combustion contaminants, and particulate matter into the atmosphere.

Applicable LORS	Description
ICAPCD Rule 405 – Sulfur Compounds Emission Standards, Limitations, and Prohibitions	Limits the concentration of the discharge of sulfur compounds and the sulfur content of liquid fuels.
ICAPCD Rule 407 – Nuisances	Prohibits the discharge from any source of any air contaminant that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endangers such persons or public or which may cause injury or damage to business or property.
ICAPCD Rule 415 – Transfer and Storage of Gasoline	This rule specifies the vapor recovery requirement for tank filling (Phase I) and vehicle refueling (Phase II) for gasoline storage and refueling facilities.
ICAPCD Rule VIII – Fugitive Dust Rules 800 through 806	These rules identify mitigation requirements to reduce fugitive dust emissions.
ICAPCD Rule 1101 – New Source Performance Standards	Incorporates the Federal NSPS (40 CFR 60) rules by reference.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: ARB = California Air Resources Board; BACT = Best Available Control Technology; CCR = California Code of Regulations; CFR = Code of Federal Regulations; CO = carbon monoxide; HSC = Health and Safety Code; ICAPCD = Imperial County Air Pollution Control District; IVS = Imperial Valley Solar; lbs/hr = pounds per hour; NO_2 = nitrogen dioxide; NO_X = nitrogen oxides; NSPS = New Source Performance Standards; NSR = New Source Review; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PSD = Prevention of Significant Deterioration; SIP = State Implementation Plan; SO_2 = sulfur dioxide; tpy = tons per year; VOCs = volatile organic compounds.

4.2.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other build alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.2.4.1 IVS Project: 750 MW Project

Construction

The total duration of project construction for the IVS project is estimated to be approximately 40 months. The actual construction duration would depend in part on the timing of transmission upgrades by San Diego Gas & Electric (SDG&E) and the actual rate of SunCatcher installation.

Different areas on the project site and the construction laydown areas would be disturbed at different times over the construction period. Approximately 3,000 acres (ac) on the 6,500 ac project site would be temporarily disturbed during construction, and approximately 2,750 ac would be permanently disturbed during project operations.

Combustion emissions would result from the use of off-road construction equipment, including diesel construction equipment for site grading, excavation, and construction of on-site structures and the water and soil binder spray trucks used to control construction dust emissions. Fuel combustion emissions also would result from on-road construction vehicles, including heavy-duty diesel trucks used to deliver materials, other diesel trucks used during construction, and workers' personal vehicles and pickup trucks used to transport workers to and from and around the construction site. Fugitive dust would result from site grading/excavation activities; installation of new transmission lines, water, and on-site hydrogen gas pipelines; construction of power plant facilities, roads, and substations; and vehicle travel on paved/unpaved roads.

The estimated daily and annual construction emissions for the IVS project, assuming implementation of mitigation, are provided in Tables 4-3 and 4-4, respectively. As shown, Month 6 is anticipated to result in the highest monthly construction emissions and Months 4 through 15 are anticipated to have the highest annual (12-month) construction emissions. Table 4-4 shows that the maximum annual (12-month) construction-related emissions are below the General Conformity Rule applicability thresholds for PM_{10} (70 tons) and O_3 precursors (NO_X [100 tons] and VOCs [100 tons]).

Table 4-3 Maximum Daily Construction Emissions (lbs/day)

Emissions	NO_X	SO_X	CO	VOCs	PM_{10}	$PM_{2.5}$
On-site Construction Emissions						
On-site Combustion Emissions	312.35	0.31	274.67	56.38	18.95	17.40
On-site Fugitive Dust Emissions	--	--	--	--	243.63	35.92
Subtotal of On-site Emissions	**312.35**	**0.31**	**274.67**	**56.38**	**262.58**	**53.31**
Off-site Emissions						
Off-site Combustion Emissions	317.51	0.64	567.20	99.49	19.47	17.04
Off-site Fugitive Dust	--	--	--	--	174.54	19.35
Subtotal of Off-site Emissions	**317.51**	**0.64**	**567.20**	**99.49**	**194.00**	**36.39**
Total Maximum Daily Emissions	**629.86**	**0.95**	**841.87**	**155.87**	**456.58**	**89.70**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; SES 2009i, Table 5.2-20 Revised).

Table Key: CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SO_X = sulfur oxides; VOCs = volatile organic compounds.

Table 4-4 Maximum Annual (12-Month) Construction Emissions (tons/yr)

Emissions	NO_X	SO_X	CO	VOCs	PM_{10}	$PM_{2.5}$
On-site Construction Emissions						
On-site Combustion Emissions	40.14	0.04	36.91	7.88	2.58	2.37
On-site Fugitive Dust Emissions	--	--	--	--	36.36	5.31
Subtotal of On-site Emissions	**40.14**	**0.04**	**36.91**	**7.88**	**38.94**	**7.68**
Off-site Emissions						
Off-site Combustion Emissions	47.42	0.09	75.82	14.17	2.91	2.55
Off-site Fugitive Dust	--	--	--	--	18.93	1.93
Subtotal of Off-site Emissions	**47.42**	**0.09**	**75.82**	**14.17**	**21.84**	**4.49**
Total Maximum Annual Emissions	**87.56**	**0.13**	**112.72**	**22.05**	**60.78**	**12.17**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; SES 2009i, Table 5.2-21 Revised).

Table Key: CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SO_X = sulfur oxides; tons/yr = tons per year; VOCs = volatile organic compounds.

The construction emission sources described above would remain the same with the applicant proposed modifications with the exception of the emissions associated with trucking water from the Dan Boyer Water Company well to the IVS project site for construction and initial operations. It is anticipated that water trucked to the construction site would require an additional 13 round trips a day between the well and the IVS project site. The capacity of each truck is 7,000 gallons (gal). Each truck would travel approximately 7 miles (mi) one-way (14 mi round trip). The peak daily and annual emissions from all construction activities with water delivery via truck were estimated. The water truck trips would generate a small amount of the total construction related emissions, as shown in Tables 4-5 and 4-6.

Table 4-5 Estimated Maximum Daily Construction Emissions of Criteria Pollutants (lbs/day) (Month 6)

Maximum Daily Construction Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	443.96	78.10	532.47	72.07	488.08	0.59
Total Emissions from Water Delivery Trucks	19.16	3.06	2.02	0.71	7.04	0.01
Total Maximum Daily Emissions	**463.12**	**81.16**	**534.49**	**72.78**	**495.12**	**0.60**
% Water Supply Emissions of Total Emissions	4.1%	3.8%	0.4%	1.0%	1.4%	1.7%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from construction equipment, construction trucks, worker vehicles, security vehicles, and SunCatcher delivery trucks.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides.

Table 4-6 Estimated Maximum Annual Construction Emissions of Criteria Pollutants (tons/yr) (Months 4 through 15)

Maximum Annual Construction Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	58.894	10.426	70.679	10.051	66.294	0.08
Total Emissions from Water Delivery Trucks	3.436	0.554	0.361	0.129	1.266	0.00
Total Maximum Annual Construction Emissions	**62.33**	**10.98**	**71.04**	**10.18**	**67.56**	**0.08**
% Water Supply Emissions of Total Emissions	5.5%	5.1%	0.5%	1.3%	1.9%	0.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from construction equipment, construction trucks, worker vehicles, security vehicles, and SunCatcher delivery trucks.

Table Key: CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides; tons/yr = tons per year.

The other three applicant proposed modifications (transmission line, water line, and hydrogen storage) would require construction very similar to the construction for the IVS project as originally proposed for those project components. Therefore, the construction related air quality impacts of those three applicant proposed modifications would be the same as under the original IVS project.

Operation

The IVS project would be a nominal 750-megawatt (MW) solar electrical generating facility. The direct air pollutant emissions from power generation are negligible; however, there are required auxiliary equipment and maintenance activities necessary to operate and maintain the facility.

Mirror washing would be required approximately once every month, requiring 14 gallons of water per dish with an average washing rate of 20 minutes per washed dish pair, or 10 minutes per dish, because each wash vehicle will be able to wash two SunCatchers simultaneously. Assuming that travel time to the next pair of dishes would be less than 5 minutes, two dishes would be washed within 25 minutes. In addition to monthly washing, seasonal scrubbing is anticipated. Seasonal scrubbing would occur prior to the peak electricity demand season from June to September. This mechanical scrubbing would require approximately 45 minutes per dish. Maintenance of the power conversion unit (PCU) and associated maintenance vehicle operations, which would be primarily due to the replacement of the main piston seals, would be required every 6,000 hours of running time (i.e., about 20 months of solar operation).

To minimize operating emissions, the following measures have been incorporated in the IVS project to minimize the operating and maintenance vehicles' emissions:

- Maintenance vehicle measures
    - All wash vehicles and other maintenance trucks will be gasoline-fueled vehicles that meet California vehicle emissions standards for the model year obtained.
    - Propane-fueled forklifts and manlifts will be used for maintenance activities requiring such equipment.
    - All security vehicles for site inspection will be hybrid-electric vehicles.
- Travel demand for operation and maintenance will be optimized to minimize vehicle miles traveled (VMT).
- Polymer-based soil binders will be applied to the unpaved roads to create stabilized surfaces, and all vehicles would be restricted to only traveling on these stabilized roads in order to reduce particulate emissions.
- Paved and sealed roads will be cleaned with vacuum-sweeping and/or water-flushing as necessary.
- Van-pooling from El Centro will be provided to employees during operations.
- Stationary and mobile source emission reduction measures
    - An electric fire water pump will be used instead of a diesel-fueled pump.
    - A 5,000-gallon (gal) regular gasoline storage tank will be used on site, and truck refueling would be kept to a minimum.
    - Hydrogen will be produced, stored, and distributed on site to remove the need for hydrogen cylinders and their delivery to the site.

The following are the stationary and mobile emission source operating assumptions that were used to develop the operation emission estimates for the IVS project:

- Stationary Emission Sources
    - 335 brake-horsepower (bhp) backup diesel generator (testing 15 minutes per week, 13 hours per year)

    - 5,000 gal gasoline storage tank (85,000 gal per year tank filling and vehicle refueling throughput; revised maximum daily throughput basis includes one 4,000 gal storage tank filling event and maximum daily vehicle refueling of 500 gal)

- Mobile Emissions Source

    - Mobile emissions sources required for operation and maintenance are estimated based on VMT and operating hours (each mobile source has a different basis for the emissions estimates).

The estimated IVS project on-site stationary and on-/off-site mobile source maximum daily and annual operations emissions are shown in Tables 4-7 and 4-8, respectively. Table 4-8 shows that maximum annual operation emissions are well below the General Conformity Rule applicability thresholds for PM_{10} (70 tons) and O_3 precursors (NO_x [100 tons] and VOCs [100 tons]).

The operational emission sources described above would remain the same with the applicant proposed modifications with the exception of the emissions associated with trucking water to the site for initial operation. That water will be delivered to the IVS site by 7 daily truck round trips with each water truck carrying 7,000 gal. Each truck would travel approximately 7 mi one-way (14 mi round trip). For calculating operations emissions under the worst-case truck transport option, the analysis assumed that 7 truck round trips would be made each day, 7 a week. The total operation daily and annual emissions were estimated including the delivery of water via truck. The water truck trips would represent a small amount of the total operations related emissions as shown in Tables 4-9 and 4-10.

The other three applicant proposed modifications (transmission line, water line, and hydrogen storage) would result in operations very similar to the operation of the IVS project as originally proposed for those project components. Therefore, the operation related air quality impacts of those three applicant proposed modifications would be the same as under the original IVS project.

Table 4-7 Maximum Daily Operations Emissions (lbs/day)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	15.58	0.07	110.19	14.42	0.29	0.25
On-site Gasoline Tank Emissions	--	--	--	31.78	--	--
On-site Fugitive Dust Emissions	--	--	--	--	121.80	17.98
Subtotal of On-site Emissions	**15.58**	**0.07**	**110.19**	**46.20**	**122.09**	**18.23**
Off-site Emissions						
Off-site Combustion Emissions	11.21	0.04	53.26	2.30	0.47	0.30
Off-site Fugitive Dust	--	--	--	--	22.66	2.04
Subtotal of Off-site Emissions	**11.21**	**0.04**	**53.26**	**2.30**	**23.13**	**2.34**
Total Maximum Daily Emissions	**26.79**	**0.11**	**163.45**	**48.50**	**145.22**	**20.57**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SES 2009i, Table 5.2-25a; SES 2009n, DR 130).

Table Key: CO = carbon monoxide; IVS = Imperial Valley Solar; lbs/day = pounds per day; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; VOC = volatile organic compounds.

Table 4-8 Maximum Annual Operations Emissions (tons/yr)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	2.52	0.01	19.73	2.56	0.04	0.04
On-site Gasoline Tank Emissions	--	--	--	0.92	--	--
On-site Fugitive Dust Emissions	--	--	--	--	20.91	3.09
Subtotal of On-site Emissions	**2.52**	**0.01**	**19.73**	**3.48**	**20.95**	**3.12**
Off-site Emissions						
Off-site Combustion Emissions	1.23	0.01	9.21	0.37	0.06	0.03
Off-site Fugitive Dust	--	--	--	--	2.23	0.10
Subtotal of Off-site Emissions	**1.23**	**0.01**	**9.21**	**0.37**	**2.29**	**0.13**
Total Maximum Annual Emissions	**3.75**	**0.02**	**28.94**	**3.85**	**23.24**	**3.26**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SES 2009i, Table 5.2-25b; SES 2009n, DR 130).

Table Key: CO = carbon monoxide; IVS = Imperial Valley Solar; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; tons/yr = tons per year; VOC = volatile organic compounds.

Table 4-9 Estimated Maximum Daily Operations Emissions of Criteria Pollutants (lbs/day)

Maximum Daily Operational Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	145.21	20.58	163.46	21.77	26.79	0.11
Total Emissions from Water Delivery Trucks	10.32	1.64	1.08	0.38	3.78	0.00
Total Maximum Daily Operational Emissions	**155.53**	**22.22**	**164.54**	**22.15**	**30.57**	**0.11**
% Water Supply Emissions of Total Emissions	6.6%	7.4%	0.7%	1.7%	12.4%	0.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from the diesel generator, maintenance and security vehicles and equipment, worker vehicles, visitor cars, and delivery trucks.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides.

Table 4-10 Estimated Maximum Annual Operations Emissions of Criteria Pollutants (lbs/day)

Maximum Annual Operational Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	23.24	4.08	28.95	3.85	3.75	0.02
Total Emissions from Water Delivery Trucks	1.86	0.21	0.19	0.07	0.68	0.00
Total Maximum Annual Operational Emissions	**25.10**	**4.29**	**29.14**	**3.92**	**4.43**	**0.02**
% Water Supply Emissions of Total Emissions	7.4%	5.0%	0.7%	1.8%	15.4%	0.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from the diesel generator, the gasoline tank, maintenance and security vehicles and equipment, worker vehicles, visitor cars and delivery trucks.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides.

Overlap of Construction and Operation Activities

The operation of individual groups of SunCatchers will begin as soon as the construction of each group is complete. As a result, it is anticipated that the first SunCatchers would be ready to operate and produce electricity in Month 8 of the construction schedule. It is anticipated that in the first month of operation, 18 MW of generation capacity would be available and that an additional 18 MW would be added every month through Month 18, after which 27 MW of capacity would begin to be added every month thereafter until construction completion in Month 40. Maximum short-term emissions during periods when project construction and operations would overlap would occur first in Month 8 because construction activities would

decline as more SunCatchers are brought online. The maximum annual (12-month) overlapping emissions would occur during Months 13 to 24 for PM_{10} and $PM_{2.5}$ and during Months 8 to 19 for all other criteria pollutants.

The estimated mitigated maximum daily and annual (12-month) emissions during the maximum construction/operation overlapping periods are shown in Tables 4-11 and 4-12, respectively. Table 4-12 shows that the maximum annual (12-month) overlapping construction/operation emissions are below the General Conformity Rule applicability thresholds for PM_{10} (70 tons) and O_3 precursors (NO_X [100 tons] and VOCs [100 tons]).

The first installed SunCatchers would be producing electricity as construction of additional SunCatchers is ongoing. The overlapping daily and annual emissions estimates that incorporate the additional water delivery by truck are summarized in Tables 4-13 through 4-15. The water truck trips would represent a small amount of the emissions during the overlapping construction and operations activities. As shown in those tables, the maximum overlapping annual emissions occur in months 8 through 19 for CO, VOC, NO_X, and SO_X; the maximum overlapping annual emissions occur in months 13 through 24 for PM_{10} and $PM_{2.5}$.

The other three applicant proposed modifications (transmission line, water line, and hydrogen storage) would result in construction/operation overlapping activities and air quality effects very similar to under the IVS project as originally proposed for those project components. Therefore, the overlapping construction/operation related air quality impacts of those three applicant proposed modifications would be the same as under the original IVS project.

Initial Commissioning

Initial commissioning refers to the period prior to beginning commercial operation when the equipment will be undergoing initial tests. For the IVS project, initial commission would occur throughout the construction period when each installed SunCatcher is tested prior to becoming operational. Because the IVS project will use a non-fuel-fired generating technology, major changes in emissions associated with the initial commissioning activities compared to normal operation are not anticipated.

Table 4-11 Maximum Daily Construction/Operation Overlapping Emissions (lbs/day)

Emissions	NO_X	SO_X	CO	VOCs	PM_{10}	$PM_{2.5}$
On-site Construction Emissions						
On-site Construction Combustion Emissions	232.53	0.24	199.21	45.95	15.20	13.95
On-site Construction Fugitive Dust Emissions	--	--	--	--	194.84	29.09
Subtotal of On-site Construction Emissions	**232.53**	**0.24**	**199.21**	**45.95**	**210.04**	**43.05**
Off-site Construction Emissions						
Off-site Construction Combustion Emissions	317.51	0.64	567.20	99.49	17.25	16.09
Off-site Construction Fugitive Dust	--	--	--	--	107.00	10.51
Subtotal of Off-site Construction Emissions	**317.51**	**0.64**	**567.20**	**99.49**	**124.25**	**26.60**
Total Maximum Daily Construction Emissions	**550.05**	**0.88**	**766.41**	**145.44**	**333.33**	**69.65**
On-site Operation Emissions						
On-site Operation Combustion Emissions	1.21	0.02	2.71	0.37	0.02	0.02
On-site Operation Fugitive Dust Emissions	--	--	--	3.55	2.92	0.43
Subtotal of On-site Operation Emissions	**1.21**	**0.02**	**2.71**	**3.93**	**2.94**	**0.45**
Off-site Operation Emissions						
Off-site Operation Combustion Emissions	0.27	0.00	1.28	0.06	0.01	0.01
Off-site Operation Fugitive Dust	--	--	--	--	0.54	0.05
Subtotal of Off-site Operation Emissions	**0.27**	**0.00**	**1.28**	**0.06**	**0.56**	**0.06**
Total Maximum Hourly Operation Emissions	**1.47**	**0.02**	**3.99**	**3.98**	**3.50**	**0.50**
Construction/Operation Overlap Totals	**551.52**	**0.90**	**770.40**	**149.42**	**336.83**	**70.15**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; SES 2009i, Table 5.2-27b).

Table Key: CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SO_X = sulfur oxides; VOCs = volatile organic compounds.

Table 4-12 Maximum Annual Construction/Operation Overlapping Emissions (tons/yr)

Emissions	NO_X	SO_X	CO	VOCs	PM_{10}	$PM_{2.5}$
On-site Construction Emissions						
On-site Construction Combustion Emissions	30.43	0.03	31.49	6.50	1.45	1.33
On-site Construction Fugitive Dust Emissions	--	--	--	--	30.09	4.31
Subtotal of On-site Construction Emissions	**30.43**	**0.03**	**31.49**	**6.50**	**31.54**	**5.64**
Off-site Construction Emissions						
Off-site Construction Combustion Emissions	43.85	0.08	71.26	13.19	2.83	2.50
Off-site Construction Fugitive Dust	--	--	--	--	17.39	1.84
Subtotal of Off-site Construction Emissions	**43.85**	**0.08**	**71.26**	**13.19**	**20.22**	**4.34**
Total Maximum Hourly Construction Emissions	**74.29**	**0.11**	**102.75**	**19.69**	**51.75**	**9.98**
On-site Operation Emissions						
On-site Operation Combustion Emissions	0.41	0.00	3.10	0.40	0.01	0.01
On-site Operation Fugitive Dust Emissions	--	--	--	0.65	6.21	0.92
Subtotal of On-site Operation Emissions	**0.41**	**0.00**	**3.10**	**1.05**	**6.22**	**0.93**
Off-site Operation Emissions						
Off-site Operation Combustion Emissions	0.19	0.00	1.45	0.06	0.02	0.01
Off-site Operation Fugitive Dust	--	--	--	--	0.66	0.03
Subtotal of Off-site Operation Emissions	**0.19**	**0.00**	**1.45**	**0.06**	**0.68**	**0.04**
Total Maximum Hourly Operation Emissions	**0.61**	**0.00**	**4.55**	**1.11**	**6.90**	**0.97**
Construction/Operation Overlap Totals	**74.90**	**0.12**	**107.29**	**20.80**	**58.66**	**10.95**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; SES 2009i, Table 5.2-27c).

Table Key: CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; SO_X = sulfur oxides; tons/yr = tons per year; VOCs = volatile organic compounds.

Table 4-13 Estimated Maximum Daily Construction and Operations Overlapping Emissions for Month 8 (lbs/day)

Maximum Daily Construction and Operations Overlapping Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	326.25	58.6	411.91	64.30	381.01	0.50
Total Emissions from Water Delivery Trucks	19.41	3.10	2.04	0.72	7.13	0.01
Total Maximum Daily Overlapping Emissions	**345.66**	**61.70**	**413.95**	**65.02**	**388.14**	**0.51**
% Water Supply Emissions of Total Emissions	5.6%	5.0%	0.5%	1.1%	1.8%	2.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from construction equipment, construction trucks, worker vehicles, the diesel generator, the gasoline tank, maintenance and security vehicles and equipment, visitor cars, delivery trucks and SunCatcher delivery trucks.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides.

Table 4-14 Estimated Maximum Annual Construction and Operations Overlapping Emissions for Months 8 through 19 (tons/day)

Maximum Annual Construction and Operations Overlapping Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	52.224	9.156	67.869	10.361	55.244	0.07
Total Emissions from Water Delivery Trucks	3.726	0.584	0.391	0.139	1.376	0.00
Total Maximum Annual Overlapping Emissions	**55.95**	**9.74**	**68.26**	**10.05**	**56.62**	**0.07**
% Water Supply Emissions of Total Emissions	6.7%	6.0%	0.6%	1.4%	2.4%	0.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from construction equipment, construction trucks, worker vehicles, the diesel generator, the gasoline tank, maintenance and security vehicles and equipment, visitor cars, delivery trucks and SunCatcher delivery trucks.

Table Key: CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides; tons/day = tons per day.

Table 4-15 Estimated Maximum Annual Construction and Operations Overlapping Emissions for Months 13 through 24 (tons/yr)

Maximum Annual Construction and Operations Overlapping Emissions	PM_{10}	$PM_{2.5}$	CO	ROC	NO_X	SO_X
Total of Other Source Emissions	56.814	9.486	62.319	8.331	50.664	0.07
Total Emissions from Water Delivery Trucks	3.986	0.614	0.421	0.149	1.466	0.00
Total Maximum Annual Overlapping Emissions	**60.80**	**10.10**	**62.74**	**8.48**	**52.13**	**0.07**
% Water Supply Emissions of Total Emissions	6.6%	6.1%	0.7%	1.8%	2.8%	0.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from construction equipment, construction trucks, worker vehicles, the diesel generator, the gasoline tank, maintenance and security vehicles and equipment, visitor cars, delivery trucks and SunCatcher delivery trucks.

Table Key: CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ROC = reactive organic compounds; SO_X = sulfur oxides; tons/yr = tons per year.

Dispersion Modeling Assessment

Emissions are the actual mass of pollutants emitted from a proposed project; however, the impacts from a proposed project are the concentration of pollutants that reach the ground level. When emissions are expelled at a high temperature and velocity through a relatively tall stack, the pollutants are greatly diluted by the time they reach ground level. For the IVS project, there are no tall emission stacks; however, the construction and maintenance vehicles and emergency engine do have high-temperature exhausts. The emissions from the IVS project, both stationary source and on-site mobile source emissions, were analyzed through the use of air dispersion models to determine the probable impacts at ground level.

Air dispersion models provide a means of predicting the location and ground level magnitude of the impacts of a new emissions source. These models consist of several complex series of mathematical equations that are repeatedly calculated by a computer for multiple ambient conditions to derive theoretical maximum off-site pollutant concentrations for short-term (1-hour, 3-hour, 8-hour, and 24-hour) and annual periods. The model results are generally described as maximum concentrations and often as a unit of mass per volume of air (e.g., $\mu g/m^3$).

The United States Environmental Protection Agency (EPA) guideline American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD) was used to estimate ambient impacts from construction and operation of the IVS project. The construction emission sources for the site were grouped into two categories: equipment (off-road equipment); and vehicles (on-road equipment), where the exhaust and fugitive dust emissions for each type were calculated for

particulate matter modeling. Emissions from onsite equipment engines were modeled as point sources and fugitive emission sources were modeled as area sources. Similar modeling procedures were used to determine impacts from the operating stationary source (emergency engine) and the maintenance vehicle exhaust and fugitive dust emissions.

The inputs for typical air dispersion models include stack information (exhaust flow rate, temperature, and stack dimensions), specific engine and vehicle emission data, and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For the IVS project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the Imperial County Airport meteorological station from 1991 to 1995.

For the determination of one-hour average and annual average construction NO_x concentrations the Ozone Limiting Method (OLM) was used to determine worst-case near field NO_2 impacts. The NO_x emissions from internal combustion sources, such as diesel engines, are primarily in the form of nitric oxide (NO) rather than NO_2. The NO converts into NO_2 in the atmosphere, primarily through the reaction with ambient O_3, and NO_x OLM assumes full conversion of stack or tailpipe NO emission with the available ambient O_3. The NOx OLM method used assumed an initial NO_2/NO_x ratio of 0.1 for diesel equipment. Actual monitored hourly background O_3 concentration data (for the 1991 to 1995 El Centro 9th Street monitoring station data that correspond with the meteorological files) were used to calculate maximum potential NO to NO_2 conversion to determine the maximum hourly NO_2 impacts.

The findings of the dispersion analysis for the IVS project short-term direct construction and operation air quality impacts are discussed below.

Construction Impacts

Using estimated peak hourly, daily, and annual construction equipment exhaust emissions, the IVS project construction emissions were modeled. To determine the construction impacts on ambient standards (i.e. 1-hour through annual) the on-site off-road construction equipment tailpipe emissions were modeled assuming that the emissions would occur during a daily construction schedule of 6 am to 7 pm, and the onsite facility security, material delivery, and fugitive dust emissions were modeled evenly throughout all hours of the day. The predicted IVS project emission concentration levels were added to a conservatively estimated background of existing emission concentration levels to determine the cumulative impact resulting from the combination of the cumulative projects described in Section 2.10, Overview of the Cumulative Impacts Analysis, and the IVS project. The results of that modeling analysis are presented in Table 4-16. The construction modeling analysis includes both the onsite fugitive dust and

vehicle tailpipe emission sources, which include the control measures incorporated in the IVS project which were listed above.

Table 4-16 Maximum Construction Impacts

Pollutants	Average Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hour	88.94	152.6	241.5	339	71%
NO_2	Annual	1.25	20.9	22.2	57	39%
CO	1-hour	78.32	3,565	3,643	23,000	16%
CO	8-hour	20.60	2,878	2,899	10,000	29%
PM_{10}	24-hour	31.37	146	177.4	50	355%
PM_{10}	Annual	6.11	47.5	53.6	20	268%
$PM_{2.5}$	24-hour	4.76	27.1	31.9	35	91%
$PM_{2.5}$	Annual	0.91	8.8	9.7	12	81%
SO_2	1-hour	0.09	47.2	47.3	665	7%
SO_2	3-hour	0.04	42.4	42.4	1,300	3%
SO_2	24-hour	0.01	18.4	18.4	105	18%
SO_2	Annual	0.001	2.7	2.7	80	3%

Table Source: Staff Assessment/Draft Environmental Impact Statement (SES 2009i, Table 5.2-29 revised).

Table Key: $\mu g/m^3$ = micrograms per cubic meter; CO = carbon monoxide; IVS = Imperial Valley Solar; NO_2 = nitrogen dioxide; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_2 = sulfur dioxide.

The modeling analysis shows that, after implementation of the measures included in the IVS project, the construction of the IVS project is not predicted to cause new exceedances of the Federal AAQSs for attainment pollutants; however, the SSAB already exceeds the Federal AAQSs for PM_{10}. It should be noted that the modeled maximum PM_{10} concentrations shown in Table 4-16 would almost certainly occur during days with low average wind speeds and not correspond to the high wind speed days assumed to cause the maximum background concentration. As such, the construction emissions of the IVS project were determined to be below the General Conformity Rule applicability thresholds for the Federal nonattainment pollutants at the project site, PM_{10} and O_3. Therefore, no adverse impacts under NEPA would occur after implementation of the measures included in the IVS project.

Operation Modeling Analysis

The impacts of the NO_X, PM_{10}, CO, and SO_X emissions resulting from operation of the IVS project were modeled and analyzed using the AERMOD model. The maintenance and stationary source emissions were modeled using the emissions data in Tables 4-7 and 4-8. The emergency diesel generator is the only stationary emission source modeled. Unlike traditional

fossil fueled power plants, most operating emissions from the IVS project would occur from maintenance activities which require the use of mobile emissions sources. Similar to the assessment of construction impacts, the modeled impacts were added to the available highest ambient background concentrations recorded during the previous three years from nearby monitoring stations to assess the potential operation related air quality impacts of the IVS project. Table 4-17 presents the results of that modeling analysis.

Table 4-17 Operation Emission Impacts

Pollutants	Average Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hour	69.18	152.6	221.8	339	65%
NO_2	Annual	0.23	20.9	21.1	57	37%
CO	1-hour	217.77	3,565	3783	23000	16%
CO	8-hour	64.48	2,878	2942	10000	29%
PM_{10}	24-hour	5.45	146	151.5	50	303%
PM_{10}	Annual	0.96	47.5	48.5	20	242%
$PM_{2.5}$	24-hour	0.77	27.1	27.9	35	80%
$PM_{2.5}$	Annual	0.14	8.8	8.9	12	75%
SO_2	1-hour	1.42	47.2	48.6	665	7%
SO_2	3-hour	0.85	42.4	43.3	1300	3%
SO_2	24-hour	0.18	18.4	18.6	105	18%
SO_2	Annual	0.0004	2.7	2.7	80	3%

Table Source: Staff Assessment/Draft Environmental Impact Statement (SES 2009i, Table 5.2-30a).

Table Key: $\mu g/m^3$ = micrograms per cubic meter; CO = carbon monoxide; IVS = Imperial Valley Solar; NO_2 = nitrogen dioxide; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_2 = sulfur dioxide.

The modeling analysis shows that, after implementation of the measures included in the IVS project, operation of the IVS project is not predicted to cause new exceedances of the Federal AAQSs for attainment pollutants, but, as noted above, the SSAB already exceeds the Federal AAQSs for PM_{10}. As also noted above, the modeled maximum PM_{10} concentrations in Table 4-17 would almost certainly occur during days with low average wind speeds and not correspond to the high wind speed days assumed to cause the maximum background concentration. As such, the operating emissions of the IVS project were determined to be well below the General Conformity Rule applicability thresholds for the Federal nonattainment pollutants at the project site, PM_{10} and O_3. Therefore, no adverse impacts under NEPA would occur after implementation of the measures included in the IVS project.

Construction/Operation Overlapping Impacts

The analysis of the potential emissions during the period when construction and operation would overlap, summarized in Tables 4-11 and 4-12, indicates that the mitigated construction/operation overlapping emissions would be no higher than those determined for the worst-case project construction period. Therefore, as was determined for project construction, no adverse impacts under NEPA would occur after implementation of the construction and operation measures included in the IVS project.

Indirect Pollutant and Secondary Pollutant Impacts

The IVS project would result in direct emissions of chemically reactive pollutants (NO_x, SO_x, and VOC), but would also have indirect emission reductions associated with the reduction of fossil-fuel fired power plant emissions because the IVS project would reduce or displace the need for their operation. The exact nature and location of such reductions is not known and most would occur outside of the SSAB; however, it is reasonable to assume that some of those reductions would occur in the SSAB because the electricity supplied by this proposed project would be partially directed to Imperial Irrigation District transmission lines, or SDG&E transmission lines from the neighboring upwind San Diego Air Basin. However, the overall magnitude of the local emission reductions or the downwind impact of the upwind emission reductions is speculative, so the discussion below focuses solely on the direct emissions from the IVS project in Imperial County.

Ozone

There are no regulatory agency models approved for assessing single source O_3 impacts. However, because of the known relationship of NO_x and VOC emissions to O_3 formation, it can be said that the emissions of NO_x and VOC from the IVS project have the potential (if left unmitigated) to contribute to higher O_3 levels in the region.

$PM_{2.5}$ Impacts

Secondary particulate (i.e., $PM_{2.5}$) formation is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion, which occurs downwind from the point of emission, is complex and depends on many factors, including local humidity and the presence of specific reactive air pollutants. The basic process assumes that SO_x and NO_x emissions are converted into sulfuric acid and nitric acid first, and these react with ambient ammonia to form sulfate and nitrate. The sulfuric acid reacts with ammonia much faster than nitric acid and converts completely and irreversibly to particulate form. Nitric acid reacts with ammonia to form both a particulate and a gas phase of ammonium nitrate. The particulate

phase will tend to fall out; however, the gas phase can revert back to ammonia and nitric acid. Thus, under the right conditions, ammonium nitrate and nitric acid establish a balance of concentrations in the ambient air. There are two conditions that are of interest, described as *ammonia rich* and *ammonia poor*. Ammonia rich indicates that there is more than enough ammonia to react with all the sulfuric acid and to establish a balance of nitric acid-ammonium nitrate. Further ammonia emissions in this case would not necessarily lead to increases in ambient $PM_{2.5}$ concentrations. In the case of an ammonia poor environment, there is insufficient ammonia to establish a balance and thus additional ammonia would tend to increase $PM_{2.5}$ concentrations.

The Imperial County part of the Salton Sea Air Basin has extensive agricultural and cattle feedlot activity and is considered ammonia rich. The available chemical characterization data shows that the $PM_{2.5}$ concentrations in Calexico, which could be severely impacted by pollutant transport from Mexicali, are primarily combustion particulate and fugitive dust. The ammonium nitrate and ammonium sulfate fine particulate concentrations in Calexico in 2002 and 2003 comprised 23 percent of the $PM_{2.5}$. Because of the known relationship of NO_x and SO_x emissions to $PM_{2.5}$ formation and the known availability of ammonia in this ammonia rich area, it can be said that the emissions of NO_x and SO_x from the IVS project have the potential (if left unmitigated) to contribute to higher $PM_{2.5}$ levels in the region; however, the region is in attainment with $PM_{2.5}$ standards and the low level of NO_x and SO_x emissions from the IVS project are not expected to impact that status.

Conformity Analysis

The IVS project is located in a Federal nonattainment area and requires the approval of the United States Bureau of Land Management, a Federal agency. Therefore, the IVS project is subject to the general conformity regulations (40 CFR Part 93). The project area is classified as serious nonattainment of the Federal PM_{10} AAQSs and moderate nonattainment of the Federal O_3 AAQSs, and the general conformity emissions applicability thresholds for these nonattainment classifications is 100 tons/year of direct and indirect O_3 precursor emissions (NO_x and VOC), 70 tons/year of direct and indirect PM_{10} emissions, and 70 tons/year of direct and indirect PM_{10} precursors identified as major PM_{10} contributors in the SIP. The currently applicable PM_{10} SIP does not identify secondary pollutants (NO_x, SO_x, and VOC) as major contributors to ambient PM_{10} concentrations and focuses on fugitive dust emissions from agricultural activities, unpaved roads, and other sources.

Without appropriate mitigation, the proposed project's maximum annual direct and indirect emissions of PM_{10} during construction and operation would have the potential to exceed 70 tons per year, and the NO_x emissions during construction would have the potential to exceed 100

tons per year. However, with the measures included in the IVS project, the PM_{10}, NO_x, and VOC emissions during construction and operation would all be below the General Conformity applicability thresholds, as shown in Tables 4-4, 4-8, and 4-12. Therefore, because the mitigated emissions of the IVS project were determined to be below the applicable General Conformity Rule applicability thresholds, the IVS project is not required to complete a conformity analysis, and conformance with the SIP is assumed.

The Imperial County Air Pollution Control District (ICAPCD) issued a Preliminary Determination of Compliance (PDOC) for the IVS project on August 20, 2009 and after a 30-day comment period that ended on September 24, 2009, issued a Final Determination of Compliance on October 14, 2009. Compliance with all ICAPCD rules and regulations was demonstrated to the ICAPCD's satisfaction in the Final Determination of Compliance (FDOC). The ICAPCD's FDOC conditions are provided in the project mitigation measures provided later in this section.

The ICAPCD is responsible for issuing Federal New Source Review (NSR) permits and has been delegated enforcement of the applicable New Source Performance Standard (Subpart IIII). However, the IVS project will not require a Federal NSR or Title V permit and would not require a PSD permit from EPA prior to the initiation of construction.

Impact Summary for the IVS Project (750 MW Alternative)

The IVS project includes measures that would reduce the project's stationary source NO_x, VOC, SO_2, PM_{10}, and $PM_{2.5}$ emissions through the use of Best Available Control Technology (BACT), minimizing delivery and employee trips, and reducing mobile source emissions by using lower emitting gasoline and propane fueled new vehicles. With the inclusion of these measures and compliance with the ICAPCD measures provided later in this section, the IVS project would not result in adverse air quality impacts.

4.2.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alterative would result in short- and long-term air quality impacts very similar to the impacts described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the air quality effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project. The short- and long-term air quality impacts of the four applicant-proposed modifications would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and

operation activities similar to the IVS project relative to the four proposed modifications. The measures described in the following section to address adverse short- and long-term air quality impacts of the IVS project would also apply to the Agency Preferred Alternative.

4.2.4.3 300 MW Alternative

The maximum daily and annual construction emissions for the 300 MW Alternative are not expected to differ from the IVS project, but the total duration of construction and total construction period emissions would be reduced because the 300 MW Alternative would not require 40 months to construct. Therefore, the worst-case daily and annual construction emissions and construction pollutant concentration impacts for this alternative would be the same as for the IVS project as shown in Tables 4-3, 4-4, and 4-16.

The maximum daily and annual operation emissions for the 300 MW Alternative are expected to be less than under the IVS project due to its smaller size. Therefore, the worst-case daily and annual operation pollutant concentration impacts for the 300 MW Alternative would be less than those shown previously in Table 4-17 for the IVS project. However, the amount of the emissions and pollutant concentration reductions would not be quite proportional to the decrease in project size due a reduction in economy of scale and requirements for certain activities/emission sources that do not scale down or scale down proportionately with changes in the size of the project.

The estimated onsite stationary and onsite and offsite mobile source emissions for the 300 MW Alternative, using the same emission control assumptions as for the IVS project, are summarized in Tables 4-18 and 4-19.

Tables 4-18 and 4-19 indicate that the maximum daily operation emissions from the 300 MW Alternative would range from approximately 45 to 80 percent of the emissions of the IVS project, and the maximum annual operation emissions would range from approximately 43 to 51 percent of the emissions of the IVS project. Table 4-19 also shows that the maximum annual operation emissions from the 300 MW Alternative would remain well below the General Conformity Rule applicability thresholds for PM10 (70 tons) and O3 precursors, (NO_x [100 tons] and VOC [100 tons]).

Table 4-18 300 MW Alternative Maximum Daily Operations Emissions (lbs/day)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	8.10	0.047	48.89	6.02	0.17	0.15
On-site Gasoline Tank Emissions	--	--	--	31.78 (Table Note 1)	--	--
On-site Fugitive Dust Emissions	--	--	--	--	53.72	7.92
Subtotal of On-site Emissions	**8.10**	**0.04**	**46.89**	**37.80**	**53.89**	**8.07**
Off-site Emissions						
Off-site Combustion Emissions	8.42	0.02	29.48	1.35	0.34	0.23
Off-site Fugitive Dust Emissions	--	--	--	--	17.79	1.90
Subtotal of Off-site Emissions	**8.42**	**0.02**	**29.48**	**1.35**	**18.13**	**2.14**
Total Maximum Daily Emissions	**16.52**	**0.07**	**76.37**	**39.15**	**72.01**	**10.21**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SES 2009n, DR 133, Table DR 133a).

Table Note 1: Assumes one 4,000-gallon gasoline delivery and 500 gallons of vehicle refueling during a worst-case day.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; MW = megawatt; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; VOC = volatile organic compounds.

Table 4-19 300 MW Alternative Maximum Annual Operations Emissions (tons/yr)

	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	1.17	0.00	8.34	1.05	0.02	0.02
On-site Gasoline Tank Emissions	--	--	--	0.71	--	--
On-site Fugitive Dust Emissions	--	--	--	--	8.66	1.27
Subtotal of On-site Emissions	**1.17**	**0.00**	**8.34**	**1.76**	**8.68**	**1.29**
Off-site Emissions						
Off-site Combustion Emissions	0.73	0.00	4.93	0.20	0.03	0.02
Off-site Fugitive Dust Emissions	--	--	--	--	1.35	0.08
Subtotal of Off-site Emissions	**0.73**	**0.01**	**4.93**	**0.20**	**1.39**	**0.10**
Total Maximum Annual Emissions	**1.90**	**0.01**	**13.27**	**1.96**	**10.06**	**1.39**

Table Source: Staff Assessment/Draft Environmental Impact Statement (SES 2009n, DR 133, Table DR 133b).

Table Key: CO = carbon monoxide; MW = megawatt; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; tons/yr = tons per year; VOC = volatile organic compounds.

The short- and long-term air quality impacts of the four applicant proposed modifications would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to the four proposed modifications.

In summary, the air quality impacts of the 300 MW Alternative would be:

- The worst-case daily construction emissions and ground level pollutant concentration impacts would be the same as the IVS project and would require the same level of mitigation. The total construction period and total construction emissions and long-term ground level pollutant concentration impacts would be reduced for the 300 MW Alternative compared to the IVS project.

- The benefits of the IVS project in displacing fossil fuel fired generation and reducing associated, but mainly out of air basin, criteria pollutant emissions would be slightly reduced under the 300 MW Alternative.

- The impacts of the IVS project would not occur on the part of the total site not used for the 300 MW Alternative. The part of the total site not used for the 300 MW Alternative would become available for other uses that are consistent with BLM's land use plan.

If the 300 MW Alternative were approved, other renewable projects would likely be developed on other sites in the in Imperial County, the Mojave Desert, or in adjacent states to fill the 450 MW gap not supplied by the IVS project as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. For example, there are two large wind projects proposed on BLM land within a few miles of the IVS project site in addition to large wind projects proposed in Mexico, south of the project site. In addition, there are seven large solar projects proposed on BLM land in the area served by the BLM El Centro Field Office. There are currently 70 applications for solar projects covering 611,692 ac in the California Desert District pending with BLM. Those types of renewable energy projects could have similar air quality impacts to the IVS project, in other locations.

4.2.4.4 Drainage Avoidance #1 Alternative

The maximum daily and annual construction emissions under the Drainage Avoidance #1 Alternative are not expected to differ from the IVS project, but the total duration of construction and total construction period emissions would be reduced because the Drainage Avoidance #1 Alternative would not require 40 months to construct. Therefore, the worst-case daily and

annual construction emissions and construction pollutant concentration impacts for the Drainage Avoidance #1 Alternative would be the same as shown in Tables 4-3, 4-4, and 4-16 for the IVS project.

The maximum daily and annual operation emissions under the Drainage Avoidance #1 Alternative are expected to decrease compared to the IVS project due to the smaller number of operational components. Therefore, the worst-case daily and annual operation pollutant concentration impacts for the Drainage Avoidance #1 Alternative would be less than those shown in Table 4-17 for the IVS project. However, the amount of the emissions and pollutant concentration reduction under the Drainage Avoidance #1 Alternative will not be quite proportional to the decrease in project size due a reduction in economy of scale and requirements for certain activities/emission sources that do not scale down or scale down proportionately with project site.

The estimated emissions for the Drainage Avoidance #1 Alternative are summarized in Tables 4-20 and 4-21.

Table 4-20 Drainage Avoidance #1 Alternative Maximum Daily Operations Emissions (lbs/day)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	13.62	0.06	94.12	12.22	0.26	0.22
On-site Gasoline Tank Emissions	--	--	--	31.78 (Table Note 1)	--	--
On-site Fugitive Dust Emissions	--	--	--	--	103.95	15.34
Subtotal of On-site Emissions	**13.62**	**0.06**	**94.12**	**44.00**	**104.21**	**15.57**
Off-site Emissions						
Off-site Combustion Emissions	10.48	0.03	47.02	2.05	0.44	0.28
Off-site Fugitive Dust Emissions	--	--	--	--	21.38	2.00
Subtotal of Off-site Emissions	**10.48**	**0.03**	**47.02**	**2.05**	**21.82**	**2.28**
Total Maximum Daily Emissions	**24.10**	**0.10**	**141.14**	**46.05**	**126.03**	**17.85**

Table Source: Staff Assessment/Draft Environmental Impact Statement, CEC interpolation of the applicant's emission data supplied for the IVS project (SES 2009i) and the 300 MW Alternative (SES 2009n, DR 133, Table DR 133a).

Table Note 1: Assumes one 4,000-gallon gasoline delivery and 500 gallons of vehicle refueling during a worst-case day.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; MW = megawatts; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; VOC = volatile organic compounds.

Table 4-21 Drainage Avoidance #1 Alternative Maximum Annual Emissions (tons/yr)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	2.17	0.01	16.74	2.16	0.03	0.03
On-site Gasoline Tank Emissions	--	--	--	0.86	--	--
On-site Fugitive Dust Emissions	--	--	--	--	17.70	2.61
Subtotal of On-site Emissions	**2.17**	**0.01**	**16.74**	**3.03**	**17.73**	**2.65**
Off-site Emissions						
Off-site Combustion Emissions	1.10	0.01	8.09	0.33	0.05	0.03
Off-site Fugitive Dust Emissions	--	--	--	--	2.00	0.09
Subtotal of Off-site Emissions	**1.10**	**0.01**	**8.09**	**0.33**	**2.05**	**0.12**
Total Maximum Annual Emissions	**3.26**	**0.01**	**24.83**	**3.35**	**19.78**	**2.77**

Table Source: Staff Assessment/Draft Environmental Impact Statement, CEC interpolation of the applicant's emission data supplied for the IVS project (SES 2009i) and the 300 MW Alternative (SES 2009n, DR 133, Table DR 133a).

Table Key: CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; tons/yr = tons per year; VOC = volatile organic compounds.

Tables 4-20 and 4-21 indicate that the operation emissions from the Drainage Avoidance #1 Alternative would range from approximately 86 to 95 percent of the maximum daily emissions of the IVS project and would range from approximately 85 to 87 percent of the maximum annual emissions of the IVS project.

Table 4-21 also shows that the maximum annual operation emissions from the Drainage Avoidance #1 Alternative would remain well below the General Conformity Rule applicability thresholds for PM_{10} (70 tons) and O_3 precursors, (NO_x [100 tons] and VOC [100 tons]).

The short- and long-term air quality impacts of the four applicant proposed modifications would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to the four proposed modifications.

In summary, the air quality impacts of the Drainage Avoidance #1 Alternative would be:

- The worst-case daily construction emissions and ground level pollutant concentration impacts under the Drainage Avoidance #1 Alternative would be the same as the IVS project and would require the same level of mitigation. The total construction period and total construction emissions and long-term ground level pollutant concentration impacts under the Drainage Avoidance #1 Alternative would be reduced from those under the IVS project.

- The benefits of the IVS project in displacing fossil fuel fired generation and reducing associated, but mainly out of air basin, criteria pollutant emissions would be slightly reduced under the Drainage Avoidance #1 Alternative.

- The impacts of the IVS project would still occur across the entire proposed project site under the Drainage Avoidance #1 Alternative, but in a less dense configuration due to avoidance of primary drainages.

If the Drainage Avoidance #1 Alternative were to be approved, other renewable projects may be developed on other sites in the in Imperial County, the Mojave Desert, or in adjacent states as described earlier to fill the 118 MW gap not supplied by the IVS project as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Those types of renewable energy projects could have similar air quality impacts to the IVS project, in other locations.

4.2.4.5 Drainage Avoidance #2 Alternative

The maximum daily and annual construction emissions under the Drainage Avoidance #2 Alternative are not expected to change from the IVS project, but the total duration of construction and total construction period emissions would be reduced because the Drainage Avoidance #2 Alternative would not require 40 months to construct. Therefore, the worst-case daily and annual construction emissions and construction pollutant concentration impacts for the Drainage Avoidance #2 Alternative would be identical those shown in Tables 4-3, 4-4, and 4-16 for the IVS project.

The maximum daily and annual operation emissions under the Drainage Avoidance #2 Alternative are expected to decrease compared to the IVS project due to its smaller number of operational components. Therefore, the worst-case daily and annual operation pollutant concentration impacts for the Drainage Avoidance #2 Alternative would be less than those shown in Table 4-17 for the IVS project. However, the amount of the emissions and pollutant concentration reduction under the Drainage Avoidance #2 Alternative will not be quite proportional to the decrease in project size due a reduction in economy of scale and requirements for certain activities/emission sources that do not scale down or scale down proportionately with project site.

The operating emissions estimates for the Drainage Avoidance #2 Alternative are summarized in Tables 4-22 and 4-23.

Table 4-22 Drainage Avoidance #2 Alternative Maximum Daily Operations Emissions (lbs/day)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	10.14	0.05	65.65	8.32	0.20	0.18
On-site Gasoline Tank Emissions	--	--	--	31.78 (Table Note 1)	--	--
On-site Fugitive Dust Emissions	--	--	--	--	72.33	10.67
Subtotal of On-site Emissions	**10.14**	**0.05**	**65.65**	**40.10**	**72.53**	**10.85**
Off-site Emissions						
Off-site Combustion Emissions	8.42	0.02	29.48	1.35	0.34	0.23
Off-site Fugitive Dust Emissions	--	--	--	--	17.79	1.9
Subtotal of Off-site Emissions	**8.42**	**0.02**	**29.48**	**1.35**	**18.13**	**2.13**
Total Maximum Daily Emissions	**18.56**	**0.07**	**95.13**	**41.45**	**90.66**	**12.98**

Table Source: Staff Assessment/Draft Environmental Impact Statement, CEC interpolation of the applicant's emission data supplied for the proposed project (SES 2009i) and 300 MW Alternative (SES 2009n, DR 133, Table DR 133a).

Table Note 1: Assumes one 4,000-gallon gasoline delivery and 500 gallons of vehicle refueling during a worst-case day.

Table Key: CO = carbon monoxide; lbs/day = pounds per day; MW = megawatts; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; VOC = volatile organic compounds.

Table 4-23 Drainage Avoidance #2 Alternative Maximum Annual Operations Emissions (tons/yr)

Emissions	NO_X	SO_X	CO	VOC	PM_{10}	$PM_{2.5}$
On-site Operation Emissions						
On-site Combustion Emissions	1.54	0.00	11.45	1.46	0.03	0.03
On-site Gasoline Tank Emissions	--	--	--	0.77	--	--
On-site Fugitive Dust Emissions	--	--	--	--	12.01	1.77
Subtotal of On-site Emissions	**1.54**	**0.00**	**11.45**	**2.23**	**12.03**	**1.79**
Off-site Emissions						
Off-site Combustion Emissions	0.87	0.00	6.10	0.25	0.04	0.02
Off-site Fugitive Dust Emissions	--	--	--	--	1.59	0.09
Subtotal of Off-site Emissions	**0.87**	**0.00**	**6.10**	**0.25**	**1.63**	**0.11**
Total Maximum Annual Emissions	**2.41**	**0.01**	**17.55**	**2.48**	**13.66**	**1.90**

Table Source: Staff Assessment/Draft Environmental Impact Statement, CEC interpolation of the applicant's emission data supplied for the proposed project (SES 2009i) and 300 MW Alternative (SES 2009n, DR 133, Table DR 133a).

Table Key: CO = carbon monoxide; MW = megawatts; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than 10 microns in size; $PM_{2.5}$ = particulate matter less than 2.5 microns in size; SO_X = oxides of sulfur; tons/yr = tons per year; VOC = volatile organic compounds.

Tables 4-22 and 4-23 indicate that the operation emissions from the Drainage Avoidance #2 Alternative would vary from approximately 58 to 85 percent of the maximum daily emissions of the IVS project, and would vary approximately 58 to 64 percent of the maximum annual emissions of the IVS project. Table 4-23 also shows that the maximum annual operation emissions from the Drainage Avoidance #2 Alternative would remain well below the General Conformity Rule applicability thresholds for PM_{10} (70 tons) and O_3 precursors, (NO_x [100 tons] and VOC [100 tons]).

The short- and long-term air quality impacts of the four applicant proposed modifications would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to the four proposed modifications.

In summary, the air quality impacts of the Drainage Avoidance #2 Alternative would be:

- The worst-case daily construction emissions and ground level pollutant concentration impacts under the Drainage Avoidance #2 Alternative would be the same as for the IVS project and would require the same level of mitigation. The total construction period and total construction emissions and long-term ground level pollutant concentration impacts under the Drainage Avoidance #2 Alternative would be reduced from those required to construct the IVS project.

- The benefits of the IVS project in displacing fossil fuel fired generation and reducing associated, but mainly out of air basin, criteria pollutant emissions would be reduced under the Drainage Avoidance #2 Alternative.

- The impacts of the IVS project would not occur on the part of the total site not used for the Drainage Avoidance #2 Alternative. The part of the total site not used for the Drainage Avoidance #2 Alternative would become available for other uses that are consistent with BLM's land use plan.

If the Drainage Avoidance #2 Alternative were to be approved, other renewable projects may be developed on other sites in Imperial County, the Mojave Desert, or in adjacent states as described earlier to fill the 327 MW gap not supplied by the IVS project as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Those types of renewable energy projects could have similar air quality impacts to the IVS project in other locations.

4.2.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the IVS project would not be approved by the BLM and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation for the site in the CDCA Plan.

In summary, the potential air quality impacts of this No Action Alternative would be:

- The impacts of the IVS project would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan.
- The benefits of the IVS project in reducing fossil fuel use and greenhouse gas emissions from gas-fired generation would not occur under this No Action Alternative.

If the IVS project is not approved, other renewable projects would likely be developed on other sites in Imperial County, the Mojave Desert, or in adjacent states as described earlier as developers strive to provide renewable power that complies with utility requirements and State and Federal mandates. Those types of renewable energy projects could have similar air quality impacts to the IVS project, in other locations.

4.2.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the project site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation for the project site in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the air quality on the site is not expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in the air quality impacts that would occur under the IVS project and it would also not result in the air quality benefits from the IVS project. However, other renewable energy projects, as described earlier, could be constructed under this No

Action Alternative to meet State and Federal mandates. Those types of renewable energy projects could have similar air quality impacts to the IVS project, in other locations.

4.2.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the IVS project would not be approved by the BLM and BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site. As a result, air pollutant emissions and impacts would result from the construction and operation of the solar technology on the project site under this No Action Alternative, similar to the air quality impacts from the IVS project. Different solar technologies require different levels of construction and operations maintenance; however, the benefits of the IVS project in displacing fossil fuel fired generation and reducing associated pollutant emissions could occur with a different solar technology at this site under this No Action Alternative. As such, this No Action Alternative could result in air quality impacts and benefits similar to the impacts under the IVS project.

4.2.5 Cumulative Impacts

Cumulative effects are defined in the CEQ NEPA regulations as "…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 actions" (40 CFR 1508.7).

This analysis is concerned with criteria air pollutants. Such pollutants have impacts that are usually (though not always) cumulative by nature. Although possible, rarely would an individual project alone cause a violation of a Federal or state criteria pollutant AAQS. However, a new source of pollution may contribute to violations of criteria pollutant AAQSs because of existing background sources or foreseeable future projects. Air districts attempt to attain the criteria pollutant AAQSs by adopting attainment plans, which comprise a multi-faceted programmatic approach to such attainment. Depending on the air district, these plans typically include requirements for air offsets and the use of Best Available Control Technology (BACT) for new sources of emissions, and restrictions of emissions from existing sources of air pollution.

As a result, most of the preceding impacts discussion reflects cumulative impacts with the IVS project or the other project alternatives. For example, the "Construction Impacts" subsection discusses the IVS project contribution to the local existing background air quality during project construction and the "Operation Impacts" subsection discusses the IVS project contribution to

the local existing background air quality during project operations. The following subsection provides two additional analyses related to cumulative impacts:

(1) A summary of projections for criteria pollutants by the ICAPCD and the ICAPCD programmatic efforts to abate such pollution; and

(2) Analysis of the IVS project's localized cumulative impacts and the IVS project's direct operating emissions combined with other local major emission sources.

Imperial County is designated as non-attainment for the Federal and State O_3 and PM_{10} AAQSs. All other criteria pollutants (NO_2, and SO_2, and $PM_{2.5}$) are considered to be in attainment of the State AAQSs, and in attainment and/or unclassified for the Federal AAQSs.

The cumulative impacts study area and cumulative projects considered in the cumulative impacts analysis for air quality are discussed in detail in Section 2.10, Cumulative Impacts Analysis.

4.2.5.1 Ozone

The current Federally approved O_3 plan for Imperial County is the *1991 Air Quality Attainment Plan*. This plan includes recommendations for measures to control stationary source and mobile source reactive organic gases (ROG) and NO_x emissions. Measures applicable to the IVS project include additional NO_x control for internal combustion engines (ICEs). The IVS project equipment would comply with the measures listed in the 1991 plan.

Imperial County failed to meet Federal attainment for the 8-hour O_3 Federal; AAQS, and was formally reclassified as moderate nonattainment of the Federal 8-hour O_3 standard in 2008. On September 23, 2009, the EPA proposed that Imperial County be approved as attainment of the 1997 Federal 8-hour O_3 AAQS. The State has proposed that Imperial County be designated non-attainment for the revised 2008 Federal 8-hour O_3 AAQS, but that standard is now being reconsidered by the EPA. So, at this time it is unclear if completion of the 8-hour O_3 attainment planning efforts by Imperial County are required, or if an O_3 attainment maintenance plan will be required instead. Imperial County is currently required to develop an 8-hour attainment plan and is in the process of completing this plan. The most recent interim draft O_3 plan contains control measures or strategies for the reduction of NO_x and ROG emissions from stationary and mobile sources. The only measures potentially applicable to the IVS project would include transportation control measures to reduce trips to and from the site; including carpool/vanpool measures, and facility design measures to enable the use of public transportation and reduce trips to and from the site during shift changes and lunch. The IVS project includes several transportation control measures including vanpools and the use of low emission electric-hybrid

vehicles, as appropriate. Because the measures in the interim draft ozone plan are not currently approved or directly applicable, the IVS project may be required to include additional emission control measures during the life of the project order to comply with new ICAPCD rules, if any are enacted as part of the revised 8-hour O_3 SIP.

4.2.5.2 Particulate Matter

The current Federally approved PM_{10} plan for Imperial County is the *1993 State Implementation Plan for PM10 in the Imperial Valley*. That plan focuses on the reduction of fugitive dust emissions from wind erosion, agricultural operations including open burning, unpaved roads, and construction activities. The recommended mitigation measures for construction and operation of the IVS project would comply with the recommended PM_{10} mitigation measures in this plan.

The EPA reclassified Imperial County from moderate to serious non-attainment of the 24-hour PM_{10} Federal AAQS for PM_{10} on August 11, 2004. As part of this re-classification, Imperial County is required to develop a new PM_{10} Attainment Plan that provides for at least a 5 percent annual reduction in PM_{10} or PM_{10} precursor emissions until the area reaches attainment status. Imperial County completed a new PM_{10} Attainment Plan on August 11, 2009 that addresses impacts of PM_{10} transport from Mexicali, Mexico, the impact of PM_{10} generated by natural events such as wind and wildfire, and PM_{10} impacts from local sources. The plan states that the PM_{10} Federal AAQS has been attained except for international emissions. The plan relies on control measures already adopted as ICAPCD rules. The core of the PM_{10} control program is based on the Imperial County Regulation VIII fugitive dust rules, most provisions of which were effective January 2006. Regulation VIII includes Rule 801 Construction and Earthmoving Activities, Rule 802 Bulk Materials, Rule 803 Carry-Out and Track-out, Rule 804 Open Areas, Rule 805 Paved and Unpaved Roads, and Rule 806 Conservation Management Practices. EPA approval of this plan is pending.

The IVS project would comply with these control measures by complying with the existing ICAPCD rules and the project mitigation measures.

4.2.5.3 Localized Cumulative Impacts

Because the IVS project air quality impacts can be reasonably estimated through air dispersion modeling (as discussed above in the Operational Modeling Analysis subsection), the contributions of the IVS to localized cumulative impacts can be estimated. To represent past

and, to an extent, present projects that contribute to ambient air quality conditions, ambient air quality monitoring data (i.e., background) was used.

In consultation with the ICAPCD, a survey was conducted of new development projects and stationary sources that have potential for emissions of criteria air contaminants within 6 mi of the IVS project site. Projects that are either under construction, or have received permits to be built or operate in the foreseeable future were identified. A total of 31 projects were reviewed, of which 24 are outside a 6-mi radius of the IVS project site and were eliminated from the list of cumulative emission sources. Six projects were eliminated due to their annual permitted emission increases being negative, negligible, or less than 5 tons per year. The last project was eliminated because it is indefinitely on hold. Therefore, it was determined that no stationary sources requiring a cumulative modeling analysis were identified within a 6-mi radius of the project site. Refer to Section 2.10 for more information on those projects.

In addition to the projects determined through consultation with the ICAPCD, there are a number of other large development projects proposed in the region. For example, two large wind projects are proposed on BLM land within a few miles of the project site, and large wind projects are proposed in Mexico, south of the project site. There are seven large solar projects proposed on BLM land within the area served by the BLM El Centro Field Office. This potential for substantial new development in the SSAB and corresponding increase in emissions in the SSAB requires the incorporation of measures that are designed to mitigate the potential contribution of the IVS project to cumulative air quality impacts by reducing the dedicated on-site vehicle emissions and fugitive dust emissions during project operation. Those measures are described in detail in the following sections.

4.2.6 Mitigation, Project Design Features, and Other Measures

4.2.6.1 Measures During Construction

Measures Incorporated in the IVS Project

The following measures have been incorporated in the IVS project by the applicant to address short term air quality effects during construction:

Exhaust Emissions Control

- Low-emitting gasoline and diesel engines meeting State and Federal emissions standards (Tiers I, II and III) will be used for construction equipment, including, but not limited to catalytic converter systems and particulate filter systems.
- All vehicles will be shut down when idling for more than 5 minutes, or as required by the ARB.
- Regular preventive maintenance of equipment engines will be performed to minimize emissions.
- Diesel fueled motor vehicles will use low sulfur and low aromatic fuel meeting California standards.
- Review availability of alternatively fueled pickups and personnel transport buses and at a minimum use gasoline fueled vehicles.

Fugitive Dust Control

- Chemical dust suppressant Soiltac™ or a product with same or better performance will be applied to all on-site unpaved roads and unpaved parking areas. The roads and parking areas will also be maintained or resealed as needed to minimize dust emissions. The soil stabilizer product used will require prior approval by the BLM and the CEC.
- Construction grading requirements for the maintenance roads will be limited to surface scraping of topsoil.
- Water application or other suppression techniques will be used to mitigate dust emissions from wind erosion of areas disturbed by construction activities.
- Paved road surfaces will be vacuum-swept and/or water-flushed to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets affected by construction activities) and paved parking areas.
- All trucks hauling soil, sand, and other loose materials will be covered, or all trucks would be required to maintain at least 2 feet of freeboard.

- Traffic speeds on all unpaved and/or unsealed site areas will be limited to 10 miles per hour.
- Sandbags or other erosion control measures will be installed to prevent silt runoff to roads.
- Disturbed areas will be revegetated as quickly as possible.
- Tires of all trucks that travel off-road will be washed prior to exiting construction site.
- Construction workers will be required to park in sealed laydown areas and will be transported to worksites in buses.
- Vehicles, including SunCatcher material delivery trucks, will be required to travel on paved or sealed roads only.
- The SunCatcher vibratory steel fin tube pedestals have been tested for all expected soil conditions on the site and can be used on the SunCatcher foundations without the need for a concrete pedestal base. This will reduce the need for concrete to be produced at the site or at a nearby concrete batch plant, and will reduce truck trip emissions associated with the delivery of finished concrete or raw materials (water, sand, aggregate, cement).

Additional Measures from the Staff Assessment/Draft Environmental Impact Statement

The Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) identified the following additional measures to address short term air quality impacts during project construction:

AQ-SC1 **Air Quality Construction Mitigation Manager (AQCMM):** The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Measures AQ-SC3, AQ-SC4 and AQ-SC5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall

not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit to the BLM's Authorized Officer and CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates.

AQ-SC2 **Air Quality Construction Mitigation Plan (AQCMP):** The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Measures AQ-SC3, AQ-SC4, and AQ-SC5.

Verification: At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the BLM's Authorized Officer and CPM for approval. The AQCMP shall include effectiveness and environmental data for the proposed soil stabilizer. The BLM's Authorized Officer or CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt.

AQ-SC3 **Construction Fugitive Dust Control:** The AQCMM shall submit documentation to the BLM's Authorized Officer and CPM in each Monthly Compliance Report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for the purposes of preventing all fugitive dust plumes from leaving the project. Any deviation from the AQCMP mitigation measures shall require prior BLM Authorized Officer and CPM notification and approval.

Verification: The AQCMM shall provide the BLM's Authorized Officer and the CPM a Monthly Compliance Report to include the following to demonstrate control of fugitive dust emissions:

A. a summary of all actions taken to maintain compliance with this condition;

B. copies of any complaints filed with the ICAPCD in relation to project construction; and

C. any other documentation deemed necessary by the BLM Authorized Officer, CPM, and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

The following fugitive dust mitigation measures shall be included in the AQCMP required by Measure AQ-SC2.

A. The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved prior to taking initial deliveries.

B. All unpaved construction roads and unpaved operational site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, in order to comply with the dust mitigation objectives of Measure AQ-SC4. The frequency of watering can be reduced or eliminated during periods of precipitation.

C. No vehicle shall exceed 10 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

D. Visible speed limit signs shall be posted at the construction site entrances.

E. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

F. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

G. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

H. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM and BLM Authorized Officer.

I. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP.

J. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

K. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

L. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.

M. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least 2 feet of freeboard.

N. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

AQ-SC4 **Dust Plume Response Requirement:** The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project

site and within 400 feet upwind of any regularly occupied structures not owned by the project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM or BLM Authorized Officer any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM or BLM Authorized Officer before that time.

Verification: The AQCMM shall provide the BLM's Authorized Officer and the CPM a Monthly Compliance Report to include:

A. a summary of all actions taken to maintain compliance with this condition;

B. copies of any complaints filed with the ICAPCD in relation to project construction; and

. C. any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 **Diesel-Fueled Engine Control:** The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior and CPM notification and approval.

Verification: The AQCMM shall include in the Monthly Compliance Report (COMPLIANCE-6) the following to demonstrate control of diesel construction-related emissions:

A. A summary of all actions taken to maintain compliance with this condition;

B. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and

C. Any other documentation deemed necessary by the CPM, and the AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

The following off-road diesel construction equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by Measure AQ-SC2.

A. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

B. All construction diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 3 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 2 levels unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this

condition, the use of such devices is “not practical” for the following, as well as other, reasons.

1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or

2. The construction equipment is intended to be on site for 5 days or less.

3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.

C. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and that a replacement for the equipment item in question meeting the controls required in item “b” occurs within 10 days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists :

1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

2. The retrofit control device is causing or is reasonably expected to cause engine damage.

3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.

4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

D. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer’s specifications.

E. All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

F. Construction equipment will employ electric motors when feasible.

4.2.6.2 Mitigation During Operation

Measures Incorporated in the IVS Project

The following emission control measures have been incorporated on the stationary equipment associated with project operation by the applicant to address short term air quality effects during construction:

Emergency Generator

An ARB/EPA Tier 3 engine, compliant with the New Source Performance Standards, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, to meet Best Available Control Technology (BACT) requirements will be used for the on-site emergency generator engine. The proposed ARB/EPA Tier 3 engine would have the following emission guarantees:

- NO_X: 4.61 gram/bhp-hour
- CO: 0.39 gram/bhp-hour
- VOC: 0.15 gram/bhp-hour
- $PM_{10}/PM_{2.5}$: 0.06 gram/bhp-hour
- SO_2: 0.12 gram/bhp-hour

Gasoline Tank

A 5,000 gal regular gasoline storage tank that incorporates ARB-certified Phase I (tank filling) and Phase II (vehicle refueling) vapor recovery systems will be used on the site. The tank would be filled only when necessary to reduce turnover and truck refueling would be kept to a minimum. The maximum annual tank throughput is expected to be 85,000 gal.

Operational and Maintenance Vehicles

- Chemical dust suppressant Soiltac™ or a product with same or better performance would be applied to all unpaved maintenance roads.
- All maintenance vehicles would be required to travel only on chemically-sealed or paved roads.
- Mirror washing maintenance would be done efficiently. Each wash vehicle would wash two SunCatchers at the same time to reduce the amount of time wash vehicles operate, and therefore reduce their emissions.
- New gasoline fueled vehicles will be used in place of diesel vehicles to reduce ozone precursor and diesel particulate matter emissions.
- Hybrid-electric vehicles would be used for all security vehicles.
- To reduce emissions from commuting, van pooling of employees from El Centro will be provided.
- Hydrogen would be produced and stored onsite and distributed to each SunCatcher to eliminate a need for hydrogen cylinder delivery truck trips.
- Paved road surfaces would be vacuum-swept and/or water-flushed to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets affected by construction activities) and paved parking areas.
- To reduce exhaust emissions, propane-fueled fork lift and man lifts would be used for maintenance.

Emission Offsets

The applicant has not proposed any emission offsets, and the stationary source and operating fugitive dust emissions for IVS project as currently proposed would be below the ICAPCD offset thresholds.

Additional Measures from the Staff Assessment/Draft Environmental Impact Statement

The SA/DEIS identified the following additional measures to address long term air quality impacts during project operation:

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards or appropriate U.S. EPA/California off-road engine emission standards for the model year when obtained.

Verification: At least 60 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report.

AQ-SC7 The project owner shall provide a site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in the verification of Measure AQ-SC3 that would be applicable to reducing fugitive dust from ongoing operations; that:

A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the project boundaries; and

B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 miles per hour on these unpaved roadways, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

The site operations fugitive dust control plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The

soil stabilizer used shall be a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation.

The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of Measure AQ-SC4. The performance requirements of Measure AQ-SC4 shall also be included in the operations dust control plan.

Verification: At least 60 days prior to the start of commercial operation, the project owner shall submit to the BLM's Authorized Officer and the CPM for review and approval a copy of the site Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer, that will be used during operation of the project and that identifies all locations of the speed limit signs. At least 60 days after the start of commercial operation, the project owner shall provide to the BLM's Authorized Officer and the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits.

AQ-SC8 The project owner shall provide the CPM copies of all ICAPCD issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) document for the facility.

The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the ICAPCD or U.S. Environmental Protection Agency (U.S. EPA), and any revised permit issued by the ICAPCD or U.S. EPA, for the project.

Verification: The project owner shall submit any ATC, PTO, and proposed air permit modifications to the CPM within 5 working days of its submittal either by (1) the project owner to an agency, or (2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC9 The emergency generator engine procured for this project will meet or exceed the NSPS Subpart IIII emission standards for the model year that corresponds to the date of purchase.

Verification: The project owner shall submit the emergency engine specifications to the CPM at least 30 days prior to purchasing the engines for review and approval.

AQ-SC10 The gasoline tank and appurtenances procured for this project will meet or exceed all vapor recovery and standing loss requirements in affect at the time of construction.

Verification: The project owner shall submit the gasoline tank and refueling equipment specifications and documentation of compliance with effective vapor recovery and standing loss requirements to the CPM at least 30 prior to purchasing the equipment for review and approval.

Measures from the Imperial County Air Pollution Control District Regulations

Regulation II – Permits

Rule 201 – Permits Required

This rule requires an Authority to Construct and Permit to Operate before the construction or operation, respectively, of non-exempt emission sources. The FDOC completes the permit application review and the Authority of Construct and Permit to Operate would be provided per rule requirements after the CEC licensing process and after construction of the permitted emission sources, respectively. Compliance with this rule is expected.

Rule 207 – New and Modified Stationary Source Review

This rule establishes the stationary source[1] requirements that must be met to obtain a Permit to Operate, including the requirement to comply with best available control technology (BACT), provide emission offsets for emission increases above specified thresholds; and provide a dispersion modeling analysis, an alternatives analysis, and a compliance certification (if

[1] The maintenance vehicles are not stationary sources and are not subject to ICAPCD rules.

applicable). In the FDOC, the ICAPCD has determined that the proposed emission controls meet BACT requirements. Therefore, compliance with this rule has been demonstrated.

The IVS project, as a minor stationary source, does not require offsets, require a dispersion modeling, analysis, or require a compliance certification per ICAPCD Rule 207.

Regulation IV – Prohibitions

Rule 400 – Fuel Burning Equipment

This rule limits discharge into the atmosphere from fuel burning equipment combustion contaminants exceeding in concentration at the point of discharge 140 lbs/hr of nitrogen oxides, calculated as nitrogen dioxide (NO_2). The emergency engine's maximum hourly NOx emission potential at full load operation is 3.41 lbs/hr; therefore, compliance with this rule is expected.

Rule 401 – Opacity of Emissions

Rule 401 limits visible emissions from emissions sources. This rule prohibits discharge of any emissions, other than uncombined water vapor, for more than three minutes in any hour. Compliance with this rule is expected with the implementation of the project measures.

Rule 403 – General Limitation on the Discharge of Air Contaminants

This rule limits discharge into the atmosphere from any single emission unit, combustion contaminants exceeding in concentration at the point of discharge 0.2 grains per dry cubic foot of gas, calculated to 12% of carbon dioxide (CO_2) at standard conditions averaged over 25 consecutive minutes. The only item subject to this rule is the emergency generator engine which would have negligible combustion contaminant emissions. Compliance with this rule is expected.

Rule 405 – Sulfur Compounds Emission Standards, Limitations, and Prohibitions

This rule limits the concentration of the discharge of sulfur compounds and the sulfur content of liquid fuels. The use of California diesel fuel would ensure compliance with this rule.

Rule 407 – Nuisance

This rule restricts emissions that would cause nuisance or injury to people or property (identical to California Health and Safety Code 41700). Compliance with this rule is expected with the implementation of the project measures.

Rule 415 – Transfer and Storage of Gasoline

This rule specifies the vapor recovery requirement for tank filling (Phase I) and vehicle refueling (Phase II) for gasoline storage and refueling facilities. The proposed gasoline tank would have both Phase I and Phase II vapor controls and would need to comply with the ICAPCD's conditions related to vapor controls. Compliance with this rule is expected.

Regulation VIII – Fugitive Dust Rules

Rule 800 – General Requirements for Control of Fine Particulate Matter

Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust from anthropogenic (man-made) sources. The rule also specifies test methods for determining compliance with visible dust emission (VDE) standards, stabilized surface conditions, soil moisture content, silt content for bulk materials, silt content for unpaved roads and unpaved vehicle/ equipment traffic areas, and threshold friction velocity. Records shall be maintained only for those days that a control measure was implemented, and kept for two years after the date of each entry. A fugitive dust management plan for unpaved roads is discussed in Rule 805. Compliance is expected with the implementation of Measures AQ-SC3 and AQ-SC7.

Rule 801 – Construction and Earthmoving Activities

Requires fugitive dust emissions throughout construction activities (from pre-activity to active operations and during periods of inactivity) to comply with the conditions of a stabilized surface area and to not exceed an opacity limit of 20%, by means of water application, chemical dust suppressants, or constructing and maintaining wind barriers. A Dust Control Plan is also required and shall be submitted to the APCO at least 30 days prior to the start of any construction activities on any site that will include 10 ac or more of disturbed surface area for residential developments, 5 ac or more of disturbed surface area for non-residential development. Compliance is expected with the implementation of Measures AQ-SC3 and AQ-SC7.

Rule 802 – Bulk Materials

Limits the fugitive dust emissions from the outdoor handling, storage and transport of bulk materials. Requires fugitive dust emissions to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20%. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized. Compliance is expected with the implementation of Measures AQ-SC3 and AQ-SC7.

Rule 803 – Carry-out and Track-out

Limits carry-out and track-out during construction, demolition, excavation, extraction, and other earthmoving activities (Rule 801), from bulk materials handling (Rule 802), and from paved and unpaved roads (Rule 805) where carry-out has occurred or may occur. Specifies acceptable (and unacceptable) methods for cleanup of carry-out and track-out. Compliance is expected with the implementation of Measures AQ-SC3 and AQ-SC7.

Rule 804 – Open Areas

Requires any open area of 0.5 ac or more within urban areas (3 ac or more within rural areas), that contains at least 1,000 square feet of disturbed surface area to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20%, by means of water application, chemical dust suppressants, paving, applying and maintaining gravel, or planting vegetation. Compliance is expected with the implementation of Measures AQ-SC3 and AQ-SC7.

Rule 805 – Paved and Unpaved Roads

Specifies the width of paved shoulders on paved roads and guidelines for medians. Requires gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants on unpaved roadways to prevent exceeding an opacity limit of 20%. Compliance is expected with the implementation of Measures AQ-SC3 and AQ-SC7.

Rule 806 – Conservation Management Practices

This rule limits fugitive emissions from Agricultural Operation Sites. The IVS project facility is not subject to this rule.

Regulation XI – New Source Performance Standards

Rule 1101 – New Source Performance Standards

This rule incorporates the Federal New Source Performance Standards (NSPS; 40 CFR 60) rules by reference. The proposed Tier 3 emergency generator engine meets the emission limit requirements of the only NSPS (Subpart IIII) that applies to the proposed IVS project equipment.

4.2.7 Noteworthy Public Benefits

Renewable energy facilities, such as the IVS project, are needed to meet California's mandated renewable energy goals. While there are no local area air quality public benefits resulting from the proposed project, it would indirectly reduce criteria pollutant emissions within the southwestern United States by reducing fossil fuel-fired generation.

Air quality benefits should not be confused with greenhouse gas/climate change benefits, which are discussed in detail in Section 4.4, Climate Change.

4.2.8 Summary of Impacts

Table 4-24 summarizes the direct, indirect, short- and long term-, and cumulative adverse and beneficial effects of the IVS project, the Agency Preferred Alternative, the other build alternatives, and the No Action Alternatives related to air quality.

As shown in Table 4-24 and as described above, the IVS project includes measures that would reduce the project's stationary source NO_x, VOC, SO_2, PM_{10}, and $PM_{2.5}$ emissions through the use of BACT, minimizing delivery and employee trips, and reducing the IVS project mobile source emissions by using lower emitting gasoline and propane fueled new vehicles. With the inclusion of these measures, the IVS project would not result in adverse air quality impacts. With the inclusion of additional measures described above, the IVS project would not contribute to cumulative adverse air quality impacts.

In summary, the construction and operation of the IVS project would not result in unavoidable adverse air quality impacts.

Table 4-24 Summary of Air Quality Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Short-term dust and vehicle emissions during construction. Long-term dust, and mobile and stationary fuel/combustion emissions. Beneficial long-term effect associated with the reduction in greenhouse emissions and would not contribute to cumulative adverse impacts.	**Project Design Features** Exhaust emissions control and fugitive dust control. Use of an NSPS-compliant emergency generator, certified tank filling and vehicle refueling vapor recover systems for the 5,000 gal fuel tank, and detailed measures for the operation and maintenance vehicles. **Construction Measures** *AQ-SC1:* Air Quality Construction Mitigation Manager *AQ-SC2:* Air Quality Construction Mitigation Plan *AQ-SC3:* Construction fugitive dust control *AQ-SC4:* Dust plume response requirement *AQ-SC5:* Diesel-fueled engine control **Operations Measures** *AQ-SC6:* Vehicles must meet applicable vehicle emissions standards. *AQ-SC7:* Operations Dust Control Plan. *AQ-SC8:* ICAPCD Authority-to-Construct and Permit-to-Operate documents. *AQ-SC9:* Emergency generator to meet or	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		exceed applicable emissions standards. *AQ-SC10:* Gasoline tank to meet or exceed all vapor recovery and standing loss requirements. **ICAPCD Regulations** *Rule 201:* Authority-to-Construct and Permit-to-Operate documents. *Regulation IV:* Prohibitions (Rule 207: new and modified stationary source requirements, Rule 400: on fuel burning equipment, Rule 401: opacity of emissions, Rule 403: general limitation on the discharge of air contaminants, Rule 405: sulfur compounds emissions standards, limitations, and prohibitions, and Rule 407: nuisance). *Regulation VIII:* Fugitive Dust Rules (Rule 800: general requirements for control of fine particulate matter, Rule 801: construction and earthmoving activities, Rule 802: bulk materials, Rule 803: carry-out and track-out, Rule 804; open areas, Rule 805: paved and unpaved roads, and Rule 806: conservation management practices). *Regulation XI:* NSPS (Rule 1101: NSPS).	
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No short- or long-term dust or vehicle emissions. No long-term beneficial effect.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No short- or long-term dust or vehicle emissions. No long-term beneficial effect.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potential for short- and long-term dust and vehicle emissions and beneficial effects similar to the Agency Preferred Alternative and the IVS project.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; gal = gallon; ICAPCD = Imperial County Air Pollution Control District; IVS = Imperial Valley Solar; MW = megawatts; NSPS = New Source Performance Standards; ROW = right-of-way.

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4.3 Biological Resources

This section of provides the analysis of potential effects to biological resources from the construction and operation of the proposed Imperial Valley Solar (IVS) project. This section addresses potential effects to special-status species and Areas of Critical Environmental Concern (ACECs) and includes proposed avoidance and mitigation measures.

Adverse effects to flora and fauna may occur through construction or operation of the facilities or infrastructure under the IVS project. Wildlife can be directly affected by mortality due to construction or operation of the facility or its infrastructure, or indirectly through habitat loss, fragmentation, or conversion. Vegetation can be directly affected by its removal as the ground surface on which it occurs is developed, or indirectly through changing populations of wildlife that feed on plants or through infestation by weedy species from developed or otherwise disturbed construction or operation areas.

Construction, maintenance, and operation of facilities in an area that contains wildlife habitat could constitute an adverse effect on those habitats.

4.3.1 Methodology

The analysis of project effects must comply with the National Environmental Policy Act (NEPA) requirements given the United States Bureau of Land Management (BLM) jurisdiction over the majority of the project site. NEPA requires that an Environmental Impact Statement (EIS) be prepared for a major Federal action that significantly affects the quality of the human environment. The NEPA implementing regulations further require that an agency determine whether an EIS or an Environmental Assessment/Finding of No Significant Impact (EA/FONSI) is required for the proposed action, or whether the proposed action is categorically exempt from NEPA review (40 Code of Federal Regulations [CFR] 1501.4). If an EIS is determined to be necessary, it is further required to provide a "…full and fair discussion of significant environmental impacts…," discussing impacts in proportion to their significance, and only briefly discussing issues that are not significant (40 CFR 1502.1, 1501.7, 1502.2). The Council on Environmental Quality (CEQ) NEPA regulations provide that "significantly" as used in NEPA requires considerations of both context and intensity (40 CFR 1508.27). By preparing this Final Environmental Impact Statement (FEIS), the BLM (as the NEPA lead agency) has determined that the IVS project would generally have a significant effect on the environment.

Effects on biological resources were evaluated by determining the sensitivity, significance, or rarity of each resource that would be adversely affected by the IVS project. Factors considered

in determining whether an alternative would have an effect on biological resources include the extent or degree to which its implementation would do any of the following:

(1) Substantially affect a rare, threatened, or endangered species or its habitat.

(2) Cause the "take" of a highly sensitive resource, such as a threatened, endangered, or special-status species.

(3) Reduce the population of a sensitive species, as designated by Federal and State agencies, or a species with regional and local significance by reducing numbers, altering behavior, reproduction, or survival, or by destroying or disturbing habitat.

(4) Introduce or increase the prevalence of invasive or predatory species; or,

(5) Cause long-term loss or impact of a substantial portion of local habitat.

An adverse effect is found when an undertaking or action alters, directly or indirectly, any of the characteristics of a habitat that provides for life history needs such as feeding, cover, travel, or breeding. The biological resource surveys conducted for the IVS project documented the presence of wildlife species, plant species, and suitable habitats within the surveyed portions of the proposed project areas. The biological resources surveys were conducted based on preliminary designs and locations of the proposed facilities for the IVS project.

4.3.2 Definition of Resource

Biological resources include genetic resources, organisms, populations, or any other biotic component of ecosystems with actual or potential use or value. Biological resources are described in Section 3.3, Biological Resources.

4.3.3 Applicable Regulations, Plans and Policies/Management Goals

The Federal laws, ordinances, regulations, and standards (LORS) applicable to the IVS project are discussed in Table 4-25. State and local LORS that are applicable to the IVS project are also included in Table 4-25. The project applicant is responsible for compliance with applicable State and local rules and regulations and permit requirements.

Table 4-25 Project Compliance with Applicable Laws, Ordinances, Regulations, and Standards Related to Biological Resources

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
Federal			
Federal Endangered Species Act (Title 16, United States Code, Section 1531 et seq., and Title 50, Code of Federal Regulations, Part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat.	YES	The applicant has sited the facilities to avoid habitat for listed endangered species. However, habitat is present for a proposed listed endangered species, the flat tail horned lizard (FTHL). In addition, a small herd of Peninsular big horn sheep (PBS) was observed on the IVS project site in March 2009, but this was considered an unusual occurrence. Nonetheless, approximately 250 acres of the site (28 percent of the 881 acres of waters of the U.S., which are vegetated by suitable species) is considered foraging habitat by the USFWS which will require mitigation. No critical habitat has been designated or identified in the project disturbance area. Therefore, the IVS project would be in compliance with this policy.
Migratory Bird Treaty Act (Title 16, United States Code, Sections 703 through 711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the Migratory Bird Treaty Act.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	Migratory birds may occur at the proposed facility in passing. The applicant will avoid the take of migratory birds. Therefore, the IVS project would be consistent with this policy.
Clean Water Act (Title 33, United States Code, Sections 1251 through 1376, and Code of Federal Regulations (CFR), Part 30, Section	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the Corps for a discharge from dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a regional water	YES	Once the acreage of impacts to waters of the U.S. are determined by the Corps and RWQCB, the applicant would be required to obtain permits for any activity that would result in a discharge from dredged or fill materials into waters of the U.S. Therefore, the IVS project would be consistent with this policy.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
330.5(a)(26))	quality control board (RWQCB) for the discharge of pollutants. By Federal law, every applicant for a Federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request State certification that the proposed activity would not violate State and Federal water quality standards.		
United States Army Corps of Engineers (Corps) Section 404 (b)(1) Guidelines (40 CFR 230 et seq.)	Requires the Corps to analyze alternatives in a sequential approach such that the Corps must first consider avoidance and minimization of impacts to the extent practicable to determine whether a proposed discharge can be authorized.	Unknown	The placement of SunCatchers and associated infrastructure in ephemeral streams on the plant site would result in the permanent impact of approximately 165 acres, the temporary impact of 5 acres, and the indirect impact of 13 acres of waters of the U.S. and permanent impact to approximately 312 acres of CDFG jurisdictional streambeds. For the proposed reclaimed water line along Evan Hewes Highway, an estimated 2.33 acres for waters of the U.S. and 0.20 acre of CDFG jurisdictional streambeds may be affected. However, this is subject to additional review from the Corps and CDFG. The Corps will be requiring mitigation in the form of enhancement and rehabilitation of Carrizo Creek and Carrizo Marsh in Anza Borrego State Park, which is owned and managed by California State Parks (CSP). Mitigation ratios would likely range from 3:1 to 5:1 based on the evaluation of direct and indirect impacts to the functions and services on-site relative to the benefit of the enhancement and rehabilitation activities in Carrizo Creek and Carrizo Marsh. At this time, it is estimated that the required mitigation for PBS and Corps jurisdictional waters

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
			of the U.S. would be similar, on the order of 250 ac of enhancement and rehabilitation in Carrizo Creek and Carrizo Marsh, which are known foraging areas for the PBS.
National Environmental Policy Act (NEPA), (Title 42, United States Code, section 4321 et seq.)	NEPA requires an evaluation of environmental impacts of projects proposed on Federal lands or receiving Federal funding.	YES	This Environmental Impact Statement (EIS) acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.
California Desert Conservation Area Plan (CDCA Plan) (BLM, 1980, as amended)	The California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how the BLM would manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.	YES	Approximately 6,140 acres of the project site is administered by the BLM and is managed under multiple use Class L (Limited Use) categories in conformance with the CDCA Plan. The IVS project consists of an electrical generating facility, a transmission line, a waterline, and ancillary facilities. As such, development of the IVS project is an allowed use under the Multiple-Use Class Guidelines. In addition, the CDCA Plan, 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 the Plan be considered through the Plan Amendment process. Therefore, the BLM would undertake a project-specific CDCA Plan amendment along with the ROW grant for the IVS project. Upon BLM's amendment of the CDCA plan for the IVS project, the proposed project would be fully compliant with the CDCA Plan. This Environmental Impact Statement (EIS) acts as the

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
			mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.
Flat-tailed Horned Lizard Rangewide Management Strategy (2003 revision)	Provides guidance for the conservation and management of sufficient habitat to maintain viable populations of FTHL in each of the five Management Areas (MAs) in perpetuity.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	The Strategy limits surface-disturbing activities in the MAs and provides for mitigation and compensation measures in known FTHL habitat. The compensation of land through payment of fees for the FTHL (to purchase other lands) makes the IVS project consistent with this policy.
Federal Noxious Weed Act of 1974 (P.L. 93-629) (7 U.S.C. 2801 et seq.; 88 Stat. 2148)	Establishes a Federal program to control the spread of noxious weeds. Authority is given to the Secretary of Agriculture to designate plants as noxious weeds by regulation, and the movement of all such weeds in interstate or foreign commerce was prohibited except under permit.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	The IVS project may result in construction activities that could further spread weeds already present in the project vicinity. Applicant will implement an active weed management strategy and control methods through a Noxious Weed Management Plan. Therefore, the IVS project would be consistent with this policy.
Executive Order 13112 of February 3, 1999 – Invasive Species (FR doc 99-3184; FR V. 64, No. 25, Presidential documents 6183-6186)	Federal agencies are mandated to take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	The IVS project may result in construction activities that could further spread weeds already present in the project vicinity. Applicant will implement an active weed management strategy and control methods through a Noxious Weed Management Plan. Therefore, the IVS project would be consistent with this policy.
The Bald and Golden Eagle Protection Act (16 USC Sections 668–668d and Title 50, Code of Federal Regulations, Section 22.26)	Prohibits the take of bald and golden eagles unless take is determined to be compatible with the preservation of the eagle, is necessary for the protection of wildlife or of agricultural or other interests in any particular locality, and where the taking is associated with but not the	YES	Implementation of the IVS project is not anticipated to result in the take of bald eagles or golden eagles. Therefore, the IVS project would be consistent with this policy.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
	purpose of the activity and cannot practicably be avoided.		
The Bald and Golden Eagle Protection Act (Title 50, Code of Federal Regulations, Section 22.27)	Authorizes intentional take of eagle nests where: necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure; the activity, or mitigation for the activity, will provide a net benefit to eagles; and allows inactive nests to be taken only in the case of safety emergencies	YES	There are no eagle nests within the project site; therefore, the project would not lead to the taking of an eagle nest. Therefore, the IVS project would be consistent with this policy.
State			
California Endangered Species Act of 1984 (Fish and Game Code, Sections 2050 through 2098)	Protects California's rare, threatened, and endangered species.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	The flat-tailed horned lizard (FTHL) is present on the project site. The FTHL is a California Species of Concern that would be adversely affected by the IVS project. Implementation of the identified Avoidance, Minimization, and Mitigation Measures would reduce the severity of potentially adverse effects to this species to the extent feasible. Therefore, the IVS project would be consistent with this policy. Peninsular bighorn sheep (*Ovis canadensis nelsoni*) (PBS) were observed on the IVS project site in March 2009. PBS is a State threatened species that would be adversely affected by the IVS project. Implementation of the identified avoidance, minimization, and mitigation measures would reduce the severity of the adverse effects to this species to the extent feasible. Therefore, the IVS project would be consistent with this policy.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
California Code of Regulations (Title 14, Section 460)	Lists State protected fur-bearing mammals.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	State protected fur-bearing mammals for this project include Desert kit fox. Desert kit foxes are protected under Title 14, California Code of Regulations section 460 and marginally suitable foraging and denning habitat for this species is located on-site. The IVS project would implement Avoidance, Minimization, and Mitigation Measures BIO-15 that would avoid these potentially adverse effects to this species. Therefore, the IVS project would be consistent with this policy.
California Code of Regulations (Title 14, Sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	The FTHL is present on the project site. The FTHL is a California Species of Concern that would be adversely affected by the IVS project. Implementation of the identified Avoidance, Minimization, and Mitigation Measures would reduce the severity of potentially adverse effects to this species to the extent feasible. Therefore, the IVS project would be consistent with this policy. PBS were observed on the IVS project site in March 2009. PBS is a State threatened species that would be adversely affected by the IVS project. Implementation of the identified avoidance, minimization, and mitigation measures would reduce the severity of the adverse effects to this species to the extent feasible. Therefore, the IVS project would be consistent with this policy.
Nest or Eggs (Fish and Game Code Section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.	YES (with implementation of Avoidance, Minimization, and Mitigation	Migratory birds and their eggs and young are protected by the Federal Migratory Bird Treaty Act and Fish and Game Code section 3503. The IVS project would implement Avoidance, Minimization, and Mitigation Measures BIO-8 and BIO-14 that would avoid these potentially adverse

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
		Measures)	effects to nesting birds. Therefore, the IVS project would be consistent with this policy.
Birds of Prey (Fish and Game Code Section 3503.5	Unlawful to take, possess, or destroy any birds in the orders Falconiformes and Strigiformes or to take, possess, or destroy the nest or eggs of any such bird.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	Applicant will avoid take of birds of prey through avoidance of nest or eggs during the breeding season and through incorporation of project design features that will prevent electrocution and collision of bird species. The IVS project would be consistent with this policy.
Migratory Birds (Fish and Game Code Section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	Migratory birds and their eggs and young are protected by the Federal Migratory Bird Treaty Act and Fish and Game Code section 3503. The IVS project would implement Avoidance, Minimization, and Mitigation Measures BIO-8 and BIO-14 that would avoid these potentially adverse effects to nesting birds. Potential effects to burrowing owls would be further mitigated by implementation of Avoidance, Minimization, and Mitigation Measure BIO-16. Therefore, the IVS project would be consistent with this policy.
Fur-bearing Mammals (Fish and Game Code Sections 4000 and 4002)	Lists fur-bearing mammals which require a permit for take.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	State protected fur-bearing mammals for this project include Desert kit fox. Desert kit foxes are protected under Title 14, California Code of Regulations Section 460 and marginally suitable foraging and denning habitat for this species is located on-site. The IVS project would implement Avoidance, Minimization, and Mitigation Measures BIO-15 that would avoid these potentially adverse effects to this species. Therefore, the IVS project would be consistent with this policy.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
Lake and Streambed Alteration Agreement (Fish and Game Code Sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.	YES	Once the acreage of impacts to CDFG jurisdictional streambeds is determined by CDFG, the applicant would be required to obtain permit for any activity that would result in a diversion, obstruction, or change in the natural flow to a bed, channel, or bank of any river, stream, or lake under jurisdiction by CDFG. Therefore, the IVS project would be consistent with this policy.
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 et seq. and California Fish and Game Code Sections 1925-1926)	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.	YES	No desert plants covered under this regulation will be removed, harvested, transported, or possessed for purposes of selling said desert plants. Therefore, the IVS project would be consistent with this policy.
California Food and Agriculture Code, Section 403	The California Department of Food and Agriculture is designated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	Applicant will implement an active weed management strategy and control methods through a Noxious Weed Management Plan. In addition, applicant will include project design features that would reduce the severity of effects resulting in providing favorable conditions to avian and other FTHL predators. Therefore, the IVS project would be consistent with this policy.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
Noxious Weeds (Title 3, California Code of Regulations, Section 4500)	List of plant species that are considered noxious weeds.	YES (with implementation of Avoidance, Minimization, and Mitigation Measures)	Applicant will implement an active weed management strategy and control methods through a Noxious Weed Management Plan. Therefore, the IVS project would be consistent with this policy.
Local			
Imperial County General Plan (Imperial County 1993)	The Conservation and Open Space and Land Use Elements of the General Plan direct the county to evaluate the compatibility of proposed development projects with the preservation of biological resources and open space.	YES	Part of the proposed project would be on county lands that are currently highly disturbed by human activity, and would coincide with the county's goal of developing alternative energy resources, as well as the State's Renewable Portfolio Standard (RPS) goals. The purpose of the EIS is to help evaluate the compatibility of proposed development project with the preservation of biological resources and open space. Therefore, the IVS project would achieve this county goal.
Imperial County Land Use Ordinance (Title 9, Division 10)	Provides grading regulations for proposed development projects throughout the unincorporated areas of the County.	YES	The applicant would be required to adhere to grading regulations identified in this LORS. Therefore, the proposed project is consistent with this county objective.

4.3.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to ephemeral streams, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.3.4.1 IVS Project: 750 MW Alternative

Construction/Operational Effects

Vegetation

Effects to vegetation communities/cover types under the IVS project are summarized in Table 4-26. Previously identified Figure 3-2, Existing Vegetation Communities, illustrates the existing vegetation communities on the project site. No designated sensitive plant communities would be directly affected by the IVS project. Even though there would be rows of vegetation approximately 74 feet (ft) wide between the rows of SunCatchers, these strips of vegetation are expected to have minimal habitat value associated with them. Only common species of lizards, snakes, and bird species such as the house finch with small area requirements are expected to use these vegetated strips. Direct effects to vegetation communities/cover types are discussed below. For purposes of this discussion, the project site is categorized by 3 designations; plant site refers to the majority of the project site where SunCatchers and ancillary facilities will be located, the transmission line refers to the portion of the transmission line within the project site that is outside of the plant site to the south of the plant site along the alignment of the transmission line south to the Imperial Valley Substation, and the reclaimed water pipeline refers to the alignment of the reclaimed water pipeline to the east of the IVS project plant site from the Seeley Wastewater Treatment Plant (SWWTP) to the plant site. For a description of the IVS project plant site, refer to Section 3.3, Biological Resources.

Table 4-26 Effects to Vegetation Communities/Cover Types

Vegetation Communities/Cover Type	Affected Area (acres)
Plant Site	
Sonoran creosote bush scrub	5,024.4
Developed (Dirt and OHV roads)	1,038.7
Subtotal Plant Site	*6,063.1*
Transmission Line	
Sonoran creosote bush scrub	92.7
Developed (Dirt and OHV roads)	0.1
Subtotal Off-Site Transmission Line	*92.8*
Reclaimed Water Pipeline (30-foot-wide ROW)	
Sonoran creosote bush scrub	9.28
Disturbed Sonoran creosote bush scrub	0.91
Desert saltbush scrub	0.20
Disturbed desert saltbush scrub	1.95
Arrowweed scrub	0.65
Tamarisk scrub	1.48
Agricultural	0.87
Disturbed	4.94
Developed	8.73
Ornamental	0.10
Open channel	0.20
Subtotal Off-Site Waterline	*29.22*
TOTAL	**6,185**

Table Key: OHV = off-highway vehicle; ROW = right-of-way.

Due to the placement of the SunCatchers, grading would not occur on the entire 6,063-ac (ac) IVS plant site. Grading of the plant site would directly affect vegetation through the removal of shrubs and herbaceous vegetation. Construction on the plant site would permanently eliminate approximately 5,024.4 ac of Sonoran creosote bush scrub and approximately 1,038.7 ac of disturbed/developed Sonoran creosote bush scrub.

Construction of an approximately 10.35-mile transmission line and spur access roads south of Interstate 8 (I-8) would result in effects to 92.7 ac of Sonoran creosote bush scrub and 0.1 ac of developed habitat.

Construction of an approximately 12-mile (mi) long, 6-inch diameter reclaimed water pipeline that would be connected to the SWWTP would provide reclaimed water for construction and

operation activities. It is anticipated that this pipeline would be constructed within a 30-ft wide ROW along the Evan Hewes Highway, primarily in developed or disturbed areas in and along the road. A total of 29.22 ac, including 13 ac of native vegetation along the 30-ft-wide ROW could be temporarily affected.

Implementation of the IVS project would result in the permanent loss of vegetation communities. Mitigation to offset this effect includes Measures BIO-8, BIO-10, and BIO-18 provided later. Therefore, although the IVS project would affect vegetation communities, this action is not likely to adversely affect vegetation communities with implementation of the identified measures.

United States Army Corps of Engineers Waters of the United States and California Department of Fish and Game Jurisdictional Streambeds

The IVS project will result in permanent impact to waters of the U.S. and California Department of Fish and Game (CDFG) jurisdictional waters. Measure BIO-17 requires that the applicant comply with mitigation requirements stated in the United States Army Corps of Engineers (Corps) Clean Water Act (CWA) Section 404 Authorization as well as requirements in the CDFG Lake or Streambed Alteration Agreement to offset impacts to waters of the U.S. and CDFG jurisdictional streambeds, respectively. Measure BIO-17 has additional measures that are also required of the applicant.

The Corps cannot issue CWA Section 404 Authorization without a Certification or Waiver of Water Quality, or Waste Discharge Requirements from the Regional Water Quality Control Board (RWQCB), pursuant to Section 401 of the CWA. It is highly likely that a CWA Section 401 Certification of Water Quality will be the appropriate CWA Section 401 process for the IVS project. The applicant will be required to comply with all conditions of a CWA Section 401 Certification or Waiver of Water Quality or Waste Discharge Requirements, which will likely include mitigation measures for impacts to waters of the U.S.

Ephemeral streams on the IVS project site provide beneficial functions and services typical of high quality, low disturbance desert scrub systems. These functions include, but are not limited to, groundwater recharge, flood peak attenuation, floodwater storage, sediment trapping and transport, nutrient trapping, and maintenance of wildlife corridors and habitat. The functions that these ephemeral streams provide would be impaired by construction and operation of the IVS project. The total acreage affected in the ephemeral streams would be approximately 165 ac of permanent impacts, 5 ac of temporary impacts, and 13 ac of indirect impacts to Corps jurisdictional waters of the U.S. and approximately 312 ac of permanent impacts to CDFG jurisdictional streambeds.

Direct permanent effects to the ephemeral streams would result from the construction of debris/sediment basins, access roads to the SunCatchers, rip-rap/retaining wall/gabion for bank stabilization, and storm drain outfall structures. Additional direct permanent effects would result from the placement of SunCatchers on 24-inch bases, the placement of culverts and Arizona crossings in the ephemeral streams, and the regular maintenance of access roads to the SunCatchers. Based on correspondence with the Corps, it is estimated the direct permanent effects to ephemeral streams caused by the placement of the SunCatchers and associated infrastructure would be 205,166 linear feet (lf) (109,376 lf for Phase 1 construction and 95,790 lf for Phase 2 construction).

Direct temporary effects to the ephemeral streams include the underground placement of the electrical collection system, the hydrogen distribution system, a 428-ft length of affected ephemeral streams for the placement of the reclaimed waterline, and the mowing of brush down to a height of 3 inches. The direct temporary effects to ephemeral streams would be 5,116 lf for Phase 1 construction only. No additional direct temporary effects to ephemeral streams are anticipated for Phase 2 construction.

For the proposed reclaimed water pipeline along Evan Hewes Highway (which would either span or go under seven irrigation canals, the New River, and adjacent wetlands), it is estimated that 0.20 ac of CDFG jurisdictional streambeds and 2.33 ac of waters of the U.S. would be directly and permanently affected. At a minimum, Best Management Practices (BMPs) will be used to maximize avoidance of impacts to waters of the U.S. and CDFG jurisdictional streambeds for the proposed reclaimed water pipeline. Any impacts to Corps jurisdictional waters of the U.S. would require mitigation in the form of creation, restoration, or enhancement at a Corps-approved location.

The Corps would require a contingency plan to address horizontal drilling under waters of the U.S. in case a drilling implement accidentally drills off the intended alignment and punctures a hole where not intended (this is called a “frac-out”). The Corps would require a Frac-Out Contingency Plan prior to the start of construction of the water pipeline.

The CDFG does not expect any direct and permanent effects to CDFG jurisdictional streambeds along the proposed water pipeline route. However, CDFG would require approval of a Frac-Out Contingency Plan prior to horizontal directional drilling taking place to address and control an inadvertent release of drilling lubricant into the waterway.

The Corps has prepared a *Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* (provided in Appendix H) to identify the Least Environmentally Damaging Practicable Alternative (LEDPA) and establish the need for mitigation for any unavoidable and adverse impacts to aquatic resources. The Final Section 404(b)(1) Alternatives Analysis and

Final LEDPA will be completed by the Corps and included with the Corps' Record of Decision (ROD). As part of the Corps' ROD, a suite of special conditions will be developed that will incorporate Measure BIO-17.

Measure BIO-17 specifies that, in addition to minimizing impacts to ephemeral streams where feasible, the replacement of the functions and services of the CDFG jurisdictional streambeds similar to those on the IVS project site at a 1:1 mitigation ratio should be required for the 312 ac of CDFG jurisdictional streambeds permanently affected by the IVS project. This CDFG recommended mitigation could be integrated to some degree (depending on the conditions of the acquired lands) with the requirement to acquire off-site flat-tailed horned lizard (FTHL) habitat. The applicant must demonstrate that the acquired FTHL habitat includes ephemeral streams that can be used to fulfill their streambed mitigation requirement. This is discussed in more detail later in this section.

The applicant would be required to: (1) acquire Sonoran creosote scrub habitat with up to 312 ac of CDFG jurisdictional streambeds; (2) submit a Management Plan for site-specific enhancement of the acquired land; and (3) delegate the land acquisition to CDFG or an approved third party.

Whereas the CDFG recommends requiring a 1:1 mitigation ratio for impacts to ephemeral streams, the Corps has indicated they typically require a minimum 2:1 mitigation ratio for unavoidable impacts, with up to half (1:1 ratio) of the mitigation dedicated to preservation and the other half to enhancement or restoration within the Salton Sea watershed. At this time, the Corps is directing the mitigation planning effort to enhance Carrizo Creek. This creek is west/northwest of the IVS project site in Anza Borrego State Park. Carrizo Creek was chosen by the Corps in coordination with the applicant and the California State Parks (CSP) because of its proximity to the IVS project site, its current protected status as a State Park, and because it is within known PBS populations. The IVS project site is in the hydrologic unit code (HUC) 8 Salton Sea Watershed with ephemeral streams that are tributary to either Coyote Wash or the Westside Main Canal prior to flowing into the Salton Sea. Carrizo Creek is in the HUC 8 Carrizo Creek watershed directly to the north, draining into San Felipe Creek and then to the Salton Sea. In coordination with the Corps and CSP, the applicant is preparing a draft enhancement plan that will cover approximately 25 linear miles of Carrizo Creek from its headwaters downstream through Carrizo Marsh. CSP has provided preliminary tamarisk (*Tamarix* spp.) infestation mapping, which will be updated by the applicant, methods for removal, and potential costs. The enhancement plan will be prepared in accordance with the Corps and EPA Final Mitigation Rule (33 CFR Parts 325 and 332 [40 CFR Part 230]) and will include detailed methods for the initial removal, retreatment methods, limited native replanting of honey and screw bean mesquite trees (*Prosopis glandulosa* and *P. pubescens*, respectively) and arrow weed (*Pluchea sericea*), monitoring and reporting protocols, and performance standards. The

Corps is unlikely to require the applicant to enhance this entire reach of Carrizo Creek to mitigate on-site direct and indirect impacts. The Corps mitigation requirement will likely be on the order of a 3:1 to 5:1 ratio depending on the enhancement plan and other data currently being collected. It is the Corps approach that the applicant will initiate the first phase of the enhancement effort equal to their final mitigation requirements and that the remainder will be completed as required by other agencies (United States Fish and Wildlife Service [USFWS] or CDFG) or completed by other applicants either through establishing an in-lieu fee program, additional permittee-responsible mitigation, or by the CSP through grant funding.

Precise details of the required mitigation would be determined after the Federal CWA 404(b)(1) alternatives analysis is complete. When this occurs, Measure BIO-17 would be updated to reflect mitigation requirements by the Corps.

Indirect permanent effects of the IVS project include the scour that will occur around the SunCatcher pedestals after a rain event due to the exposure of bare soil following vegetation removal and the obstruction of water in the flow path. It has been estimated that a 24-inch-diameter foundation in the bed of the ephemeral streams in the project area would have a scour depth of approximately five ft for flow velocities of 8 to 10 feet per second (fps) (a 100-year storm event). At more common flow velocities of 2 to 5 fps, the scour depths are estimated from 2 to 3.5 ft. More detailed analysis related to scour is presented in Section 4.17, Hydrology, Water Use, and Water Quality. It is anticipated that scour repair and removal of sediment from the debris/sediment basins with heavy equipment would be ongoing throughout the life of the project.

An indirect effect of SunCatchers in the ephemeral streams would be the scour created around the pedestals after a rain event due to the obstruction in the flow path and due to the bare soil following vegetation removal. The hydraulics of flow were used to compute the depth of local scour as well as the area affected by scour by Chang Consultants (2010) using the equation recommended by the Federal Highway Administration (FHWA) in Hydraulic Engineering Circular No. 18, FHWA, 2006 (2010b). Wash D was used as a sample wash to model the indirect effects of scour around SunCatcher pedestals placed in ephemeral streams. The modeling used a 100-year flood event as the precipitation event and determined that the average scour radius during that storm event was a 44.9-square-foot (sf) circle around the SunCatcher pedestal. The scour hole gets partially refilled during the falling stage of the storm flow (i.e., the scour hole becomes smaller by the end of the storm). It calculates that 50 percent of the scour depth is refilled toward the end of the storm for a scour disturbance of 21.9 sq ft around the SunCatcher pedestal (Chang Consultants 2010).

It is anticipated that scour repair would be ongoing throughout the life of the IVS project but would only require maintenance following large storm/flood events. In addition, it is anticipated

that trimming and/or removal of vegetation within the ephemeral streams would continue throughout the life of the IVS project; however, maintenance trimming would consist primarily of removing any shrubs or trees that shade the SunCatchers and any vegetation that would impede the ability of the SunCatcher to track the sun.

Any temporary effects to Corps jurisdictional waters of the U.S. or CDFG jurisdictional wetlands associated with trenching across water bodies would require restoration of the stream and uplands within the buffer areas to the existing elevations, contours, and vegetation communities immediately following construction. The Corps is requiring development of an on-site restoration plan for this purpose, which will be in addition to or incorporate the long-term weed management plan required for construction and operational purposes. While the IVS project is anticipated to result in effects to Corps jurisdictional waters of the U.S. and CDFG jurisdictional streambeds, with implementation of Mitigation Measures BIO-17 (Mitigation of CDFG Streambeds and Corps jurisdictional waters of the U.S.) and BIO-18 (Noxious Weed Management Plan), as well as anticipated special conditions by the Corps to develop an on-site restoration plan for temporary impact areas, the IVS project is not likely to adversely affect waters of the U.S. and CDFG jurisdictional streambeds.

Special-Status Plants

Ground-disturbing activity associated with the IVS project has the potential to disturb either individual plants or populations of special-status plant species should they be present in the project area.

Direct and permanent effects to special-status plant species could occur from construction activities that remove vegetation, disturb soils, or cause sedimentation. These activities include the construction of the IVS project, the placement of transmission lines, maintenance of construction equipment and supplies, staging of equipment and materials, the use or improvement of existing access roads, and the construction of access roads. Indirect and permanent effects of the IVS project construction and operations could include the loss of topsoil, disruption of native seed banks through soil alterations, the accumulation of fugitive dust, increased wind and water erosion and sediment transport, and the colonization of nonnative, invasive plant species.

One special-status plant species was found during the spring 2010 botanical surveys: Wiggins' croton (*Croton wigginsii*), which is listed as BLM sensitive. There are 2 special-status species that were addressed in the SA/DEIS with the potential to occur on the project site that are targets of the late summer/early fall 2010 botanical surveys, neither of which has Federal status or State status nor is listed as BLM sensitive; Abram's spurge (*Chamaesyce abramsiana*) (CNPS 2.2) and curly herissantia (*Herrisantia crispa*) (CNPS 2.3).

In order to avoid of populations of special-status plants, the applicant would prepare a Special-Status Plant Protection Plan and provide compensatory mitigation ratio of up to 2:1, as determined by BLM, if impacts to special-status plants cannot be avoided. These compensation measures are described in Mitigation Measure BIO-19. With implementation of the identified Mitigation Measure BIO-19, the IVS project is not likely to adversely affect special-status plant species.

Raptors and Migratory/Special-Status Bird Species

Vegetation at the plant site and along linear facilities provides foraging, cover, and/or breeding habitat for migratory birds, including a number of special-status bird species confirmed to be present at the site. Loggerhead shrike, Le Conte's thrasher, and California horned lark are special-status species known to breed and forage at the site. Western burrowing owls, which also occur at the IVS plant site and linear facilities, are discussed below. Power plant construction would eliminate nesting habitat for these and other species, and could result in direct and cumulative effects to these species due to habitat loss or injury/fatality of individuals. No adverse effects to raptors are anticipated because these species occur infrequently at the IVS area and do not breed there.

The IVS project site does not provide nesting habitat for the golden eagle but does contain marginal to suitable foraging habitat for this eagle. The potential loss of marginal to suitable foraging habitat for the golden eagle as a result of the IVS project would not result in the loss of individual golden eagles or in adverse impacts to golden eagle populations. The IVS project site does not include any golden eagle nesting habitat, nests, breeding territory, or communal roosts. It is not known if the IVS project site functions as a golden eagle migratory corridor; however, the IVS project would not adversely affect golden eagle migratory patterns.

The IVS project site does not provide nesting or forage habitat for the bald eagle. Bald eagles typically live along the coast or rivers and streams and feed primarily on fish. The IVS project site does not include any bald eagle nesting habitat, nests, forage habitat, or roosts. As a result, the IVS project will not result in effects on the bald eagle.

The loss of active bird nests or young is regulated by the Federal Migratory Bird Treaty Act, which protects active nests or eggs. To avoid and minimize effects to nesting birds, mitigation has been incorporated into Mitigation Measures BIO-8 and BIO-14. Measures to minimize effects to nesting birds in Mitigation Measure BIO-8 include minimizing vegetation disturbance and clearance, flagging disturbed areas to confine equipment and vehicles within the flagged areas, and reducing the likelihood of large bird electrocutions and collisions by following the Avian Power Line Interaction Committee guidance (APLIC 2006). Mitigation Measure BIO-14 would minimize effects to nesting birds through conducting ground-disturbing activities outside the bird nesting season (February 1 through July 31) if practicable, conducting a pre-

construction survey should construction activities occur during bird nesting season, and establishing a no disturbance buffer zone should a nest be present. Similar measures have been applied on past projects and the application of these measures has been effective in minimizing effects to nesting birds.

Burrowing Owl

Burrowing owls nesting on the IVS project site could be directly affected by construction of the IVS project. Burrowing owl adults, eggs or young could be crushed or entombed by grading activities. Nesting and foraging activities would also be directly and indirectly affected by construction and operation of the IVS project. The IVS project would also result in permanent loss of 6,185 ac that are currently used by burrowing owls for nesting and foraging. In addition to the potential direct effects to burrowing owl burrows, the IVS project would permanently eliminate a large expanse of habitat on the plant site and along the linear facilities that is currently available for foraging and breeding by burrowing owls. Habitat loss is one of the primary threats to California's burrowing owl population.

To avoid potential effects to burrowing owls that might be nesting on the IVS project site, measures proposed include conducting pre-construction surveys on the plant site and along all linear facilities and utilizing methods recommended by the California Burrowing Owl Consortium (CBOC). To avoid and offset potentially adverse effects to nesting owls, passive removal of the owls has also been proposed. Passive removal involves encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are at least 150 ft from the impact zone and that are within or contiguous to a minimum of 6.5 ac of foraging habitat for each pair of relocated owls. Passive relocation of owls is only implemented during the non-breeding season unless a qualified biologist can verify through non-invasive methods that egg laying/incubation has not begun or juveniles are foraging independently and able to fly. The unoccupied burrows would be collapsed in accordance with CDFG-approved guidelines.

Mitigation measures also identified in this FEIS propose ground-disturbing activities to occur outside the burrowing owl breeding season (February 1 through August 30) when practicable as determined by BLM and clearance surveys by qualified biologists will be conducted prior to each phase of project construction.

Conducting pre-construction surveys, scheduling ground-disturbing activities outside burrowing owl breeding season, and conducting clearance surveys prior to each phase of project construction has been incorporated into Mitigation Measure BIO-16. The BLM would require that surveys and monitoring of burrowing owl burrows within 500 ft of construction activity be conducted. Mitigation Measure BIO-16 also requires that a temporary noise barrier be placed to reduce noise levels near burrows should nesting burrowing owls be within 500 ft of active

construction. Though BLM had initially proposed that burrowing owl would be actively relocated outside of nesting season (February 1 through August 31), active relocation is not allowed by the CDFG code (California Fish and Game Code section 3503.5). In compliance with CDFG regulations, burrowing owls can only be passively relocated followed by the collapsing of burrows.

With implementation of the identified mitigation measures, the IVS project is not likely to adversely affect raptors and migratory or special-status bird species.

Special-Status Mammals

American Badger

American badgers were not detected on the site, but several potential burrows were discovered on-site in addition to a documented occurrence across I-8 from the project site. The project site includes moderately suitable foraging and denning habitat for this species. The American badger is protected under Title 14, California Code of Regulations (CCR) Sections 670.2 and 670.5. Construction of the IVS project could kill or injure American badgers by crushing them with heavy equipment, or could entomb them within a den. Construction activities could also result in disturbance or harassment of individuals. Mitigation Measure BIO-15 requires that, concurrent with the FTHL clearance activities, a qualified biologist would perform a pre-construction survey for badger dens in the project area. This would include areas within 250 ft of all project facilities, utility corridors, and access roads. Should a badger be located on-site, the applicant shall initiate passive removal of the badger and the collapse of the burrow after its removal would occur. This guidance has been incorporated in Mitigation Measure BIO-15.

Desert Kit Fox

The desert kit fox (*Vulpes macrotis*) is not a special status species, but it is protected under Title 14, CCR Section 460, which states that “Fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time.” These fur-bearing mammals are State protected. Therefore, potential adverse effects impacts to individuals of this species must be avoided. Desert kit fox signs were detected on the IVS site. In addition, marginally suitable foraging and denning habitat for this species is located on-site. Construction of the IVS project could kill or injure desert kit fox by crushing them with heavy equipment, or could entomb them within a den. Construction activities could also result in disturbance or harassment of individuals. Mitigation Measure BIO-15 requires that, concurrent with the FTHL clearance activities, a qualified biologist would perform a pre-construction survey for kit fox dens in the project area, including areas within 250 ft of all project facilities, utility corridors, and access roads. Should a desert kit

fox be located occur on-site, the applicant shall initiate passive removal of the kit fox and the collapse of the burrow after its removal would occur.

Peninsular Bighorn Sheep

A group of five female/yearling Peninsular bighorn sheep were observed in an ephemeral streams on the western half of the project site in March 2009. Although this species could use the IVS project site as foraging habitat, data collected for this project suggests that use of the project site by Peninsular bighorn sheep is transitory and likely a result of drought conditions. As the IVS project is located on flat terrain, sheep entering the area are far from escape-preferred mountainous habitat and the animals likely would be in a highly stressed state. Further, the project site is already surrounded by busy highways and the railroad, suggesting that the sighting was incidental.

The USFWS has determined that the project area provides some forage function for Peninsular bighorn sheep. The USFWS and BLM biologists agree that the observation of Peninsular bighorn sheep on the site in spring 2009 was an unusual occurrence because no known lambing sites or water sites are known near the project site and no other bighorn sheep occurrences have been documented in the vicinity of the project site. USFWS is in the process of preparing a Biological Opinion for the potential adverse project effects to the PBS. Currently, USFWS anticipates requiring mitigation in the form of enhancement or restoration for the estimated 250 ac of foraging habitat on the IVS project site. Mitigation for this foraging habitat would be consistent and overlapping with the Corps proposed mitigation approach at Carrizo Creek and Carrizo Marsh.

BLM determines that the IVS project is not likely to adversely affect Peninsular bighorn sheep with implementation of Mitigation Measures BIO-8 (Construction and Operation Minimization Measures) and BIO-17 (Mitigation of CDFG Streambeds and Corps jurisdictional waters of the U.S.), and anticipated requirements by the USFWS. Mitigation Measure BIO-8 would include erecting fences and gates to preclude large mammal access to the site and to contain construction equipment; covering excavated areas, and sloping the trench or installing wildlife escape ramps in the excavated areas should facilitate the escape of any sheep that wander on site.

Mitigation Measure BIO-17 would include mitigating impacts to Corps jurisdictional waters of the U.S. through the enhancement of Carrizo Creek and Carrizo Marsh in Anza Borrego State Park in known PBS territory.

With implementation of the identified mitigation measure and mitigation required by the USFWS, the IVS project is not likely to adversely affect special-status mammals.

Flat-Tailed Horned Lizard

Surveys in 2007 and 2008 indicated that FTHL inhabits the 6,063-ac plant site and the 92.8-ac off-site transmission corridor. The 12.34 ac of Sonoran creosote bush scrub and salt bush scrub located along the proposed off-site reclaimed water line also provide suitable habitat for FTHL (SES 2008a).

Though the FTHL is not currently listed by the USFWS, it is currently proposed for listing. In anticipation of the FTHL being Federally listed, the BLM has undergone conferencing with the USFWS to address the potential take and loss of habitat associated with the FTHL. If the FTHL becomes listed, the Conferencing Opinion from USFWS would then be converted to a Biological Opinion with a take statement as long as no changes have occurred or if no new information is learned since the issuance of the Conferencing Opinion.

A stated goal of the Flat-tailed Horned Lizard Rangewide Management Strategy (Strategy) is to "provide a framework for securing and managing sufficient habitat to maintain several self-sustaining populations of the FTHL throughout the species' range in the U.S." The Strategy was developed in 1993 and updated in 2003 by the FTHL Interagency Coordinating Committee (ICC) to ensure that FTHL habitat and populations are managed appropriately. The ICC consists of representatives from the USFWS, CDFG, BLM, Bureau of Reclamation (BOR), United States Marine Corps Loma Air Station, United States Navy SW Division, San Diego, United States Naval Air Facility El Centro, Arizona Game and Fish, California State Parks, and Ocotillo Wells.

Direct effects associated with construction activities within these the project areas would result in permanent loss of FTHL habitat. Construction activities could also result in direct mortality, injury, or harassment of FTHLs as a result of encounters with construction vehicles or heavy equipment.

Other direct effects that could occur during construction of the project include individual FTHLs being crushed or entombed in their burrows, collection or vandalism of FTHLs, disruption of FTHL behavior during construction or operation of facilities, and disturbance by noise or vibrations from the heavy equipment. Increased human activity and vehicle travel would occur from the construction and improvement of access roads, which could also disturb, injure, or kill individual FTHLs.

As previously stated, implementation of the IVS project would result in the loss of FTHL habitat. Even though the applicant would retain some vegetation in rows next to the SunCatchers, BLM considers the entire project site affected in regards to FTHL habitat. The BLM considers the 1,038.7 ac of narrow dirt and off highway vehicle (OHV) roads which traverse the project site

equivalent habitat to the undeveloped areas as the horned lizards use all areas within the 6,063.1 ac site.

Compensation for habitat lost outside of the Yuha Desert FTHL Management Area (MA), which would include the 6,063.1-ac project site (including the 1,038.7 ac of dirt and OHV roads that already exist on site), would be at a 1:1 ratio. At a 1:1 ratio, the applicant would be required to compensate for the loss of 6,063.1 ac of FTHL habitat.

The compensation for habitat lost inside the FTHL MA would be increased to a 6:1 ratio. This compensation would be for areas affected by the installation of the 7.56-mi long transmission line outside the project site. Approximately 92.8 ac would be affected within the Yuha Desert FTHL MA as a result of the construction of the transmission line. At a 6:1 ratio, the applicant would be required to compensate for the loss of 556.8 ac (92.9 ac x 6 = 556.8 ac). The applicant would be required to compensate for a total mitigation requirement of 6,619.9 ac when combining the requirements at 1:1 and 6:1.

Impact acreages for the proposed reclaimed water pipeline route were not calculated by the BLM. Although the proposed reclaimed water pipeline is on BLM administered land, construction activities that would occur would be mainly in the developed/ disturbed portions in and along the Evan Hewes Highway. Even though FTHL habitat borders the Evan Hewes Highway, it is anticipated that direct pipeline construction impacts to vegetation and wildlife would be temporary and can be reduced with implementation of Mitigation Measures BIO-1 through BIO-9.

In lieu of the applicant acquiring any compensation lands, compensation acreage can be converted to a monetary equivalent (including administrative costs) that is required to replace the FTHL acreage or adjusted acreage affected by the IVS project. The primary use of the compensation funds is to acquire, protect, or restore FTHL habitat both within and contiguous with MAs. Table 4-27 provides a breakdown of compensation costs for impacts to FTHL and FTHL habitat. The costs are based on BLM's best estimate of current costs per acre and are subject to changing real estate acquisition costs. These compensation funds are incorporated in Mitigation Measure BIO-10 and are based on the calculations provided in Table 4-27.

Table 4-27 Breakdown of Compensation Costs for FTHL

	Project Site (1:1 Ratio) Total Acreage	Off Site Transmission Line (6:1 Ratio) Acres Affected: 92.8	Total
Compensated Acres	6,063.1	(92.8 x 6) = 556.8	6,619.9
Land cost/acre at no less than $500/acre (Table Note 1)	$3,031,550	$278,400	$3,309,950
Level 1 Environmental Site Assessment $3,000/parcel (Table Note 2) (approximately 40 acres/parcel)	No. of parcels: (6,063.1/40) = 151.5775 parcels	No. of parcels: (556.8/40) = 13.92 parcels	166 parcels
No. of parcels (acres/40) x $3,000/parcel cost	152 parcels x $3,000 = $456,000	14 parcels x $3,000 = $42,000	$498,000
Appraisal at no less than $5,000/parcel (No. of parcels x $5,000)	152 parcels x $5,000 = $760,000	14 parcels x $5,000 = $70,000	$830,000
Fee to clean up, restore, and enhance FTHL habitat at no less than $27/acre (Table Note 3)	6063.1 acres x $27/acre = $163,703.70	556.8 acres x $27/acre = $15,033.60	$178,737.30
Closing and Escrow Costs at $5,00/parcel (Table Note 4)	152 parcels x $5,000 = $760,000	14 parcels x $5,000 = $70,000	$830,000
Biological survey for determining mitigation value of land (habitat based with species specific augmentation) at $5,000/parcel	152 parcels x $5,000 = $760,000	14 parcels x $5,000 = $70,000	$830,000
Third party Administration Costs (Land cost x 10%) (Table Note 5)	$3,031,550 x 10% = $303,155	$278,400 x 10% = $27,840	$330,995
BLM cost to accept donated land (Land cost x 15% x 1.17) (1.17 = 17% of the 15% for overhead costs) (Table Note 6)	$3,031,550 x 15% x 1.17 = $532,037.03	$278,400 x 15% x 1.17 = $48,859.20	$580,896.23
Subtotal	$6,766,445.73	$622,132.80	$7,388,578.53
Long-term management and maintenance fund (LTMM) fee at $692/acre (Table Note 7)	$4,195,665.20	$385,305.60	$4,580,970.80
National Fish and Wildlife Foundation (NFWF) Fees			
NFWF Fee to establish project specific account	--	--	$12,000
NFWF Management fee for acquisition and enhancement actions (subtotal x 3%)	$202,993.37	$18,663.99	$221,657.36

	Project Site (1:1 Ratio) Total Acreage	Off Site Transmission Line (6:1 Ratio) Acres Affected: 92.8	Total
NFWF Management fee for LTMM account (LTMM x 1%)	$41,956.65	$3,853.06	$45,809.71
Subtotal of NFWF Fees	**$244,950.02**	**$22,517.05**	**$279,467.07**
TOTAL (Subtotal + LTMM + NFWF Fees)	**$11,207,060.95**	**$1,029,955.45**	**$12,249,016.40**

Table Note 1: The costs presented in this table are the best estimate as of summer 2010. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. The total compensated acreage is multiplied by $500 an acre to estimate the land cost. This is a generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18 to 24 month time period to acquire the land after agency decisions have been made. If the agencies, developer, or a third party has better, credible information on land costs, in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: Regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.

Table Note 2: For the purposes of determining the costs, a parcel is defined at 40 acres., recognizing that some parcels will be larger and some will be smaller, but 40 acres provides a good estimate for the number of transactions anticipated (based on input from CDD).The total compensated acreage is divided by 40 to figure the number of parcels. The number of parcels is then multiplied by the $3,000 per parcel fee.

Table Note 3: Based on information provided by California Department of Fish and Game.

Table Note 4: The Closing and Escrow Costs are based on two transactions, landowner to a third party and from the third party to the agency.

Table Note 5: The Third party Administration cost includes BLM staff time to work with agencies and landowners, develop a management plan; oversee the land transaction; organize reporting and due diligence; review of acquisition documents and any other work to complete the land acquisition.

Table Note 6: The costs to accept donated land into the public management system include costs for tracking and managing the costs of the donation acceptance which include two physical inspections; review and approval of the Level 1 Environmental Site Assessment; review of all title documents, drafting deed and deed restrictions, issue escrow instructions, mapping the parcels and any other work to complete placing the land into the public management system.

Table Note 7: The Long-term management and maintenance fund cost is an estimate for calculating the general costs. The actual long-term management costs will be determined using a Property Assessment Report (PAR) tailored to the specific acquisition. This cost includes land management, enforcement and defense of easement or title, short and long term monitoring etc.

The issuance of a Conference Opinion from the USFWS would contain measures that the applicant would be required to follow. These measures would be incorporated into the following mitigation measures:

BIO-9 **Flat-Tailed Horned Lizard Avoidance, Minimization, and Mitigation Measures.** The Designated Biologist will contact the BLM, CEC Compliance Project Manager (CPM), and the USFWS before ground disturbing activities, document compliance, be present during operations and maintenance (O&M) activities that take place in FTHL habitat. The project applicant will be responsible for funding before and after impacts analysis, erecting exclusionary fencing along access roads during construction. The applicant's Designated Biologist will salvage any observed FTHL, record data about the salvaged FTHL, and move the salvaged FTHL out of harm's way.

BIO-10 **Flat-Tailed Horned Lizard Compensatory Mitigation.** Identifies the compensation costs to mitigate for FTHL habitat loss, potential take of FTHL, and selection criteria for compensation lands.

BIO-11 **Flat-Tailed Horned Lizard Compliance Verification.** Requires the Designated Biologist to verify for the BLM that all FTHL impact avoidance, minimization, and compensatory measures have been implemented.

The Strategy discusses the use of FTHL barrier fencing in MAs where long-term activities occur. Fencing can be used to exclude FTHL after clearing the construction area of lizards. However, the BLM believes that this action is not practicable due to the large size of the project. The FTHL Strategy was initially based on the recovery plan for desert tortoise, which requires exclusionary fencing for projects affecting desert tortoise. As the detection level during clearance surveys for desert tortoise is greater than FTHL due to the cryptic coloration and the freeze and/or bury behavior to escape detection, the FTHL exclusionary fencing would trap organisms within the so called "cleared" areas rather than excluding them. The BLM consulted with various members of the ICC, and all other signatories agreed with BLM to use the barrier fencing at the discretion of the Designated Biologist in areas deemed appropriate.

After construction is complete, additional project related effects could continue to adversely affect FTHL. Potential indirect operation impacts to FTHL include increased risk of avian predation on FTHL, increased levels of onsite vehicular traffic and disturbance, increased levels of potential collisions with structures, effects of disturbance and lighting, and noxious weeds.

Although implementation of the identified Mitigation Measures BIO-8, BIO-9, BIO-10 and BIO-12 would reduce the severity of affects on the FTHL, the IVS project is likely to adversely affect FTHL.

Avian Predators

Construction and operation of the IVS project could provide new sources of food, water, and nesting and perching sites that might attract unnaturally high numbers of FTHL predators such as the common raven, loggerhead shrike, and American kestrel. Ravens depend on human encroachment to expand into areas where they were previously absent or in low abundance. Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting resources that are introduced or augmented by human encroachment. Common raven populations in the Colorado and Mojave deserts increased 1,000 percent from 1968 to 1992 in response to expanding human use of the desert. This increase has had a negative impact on special-status species such as the desert tortoise and FTHL.

Construction and operation of the IVS project would provide new attractants and subsidies that might result in changes in raven population or behavior, which could subsequently affect the FTHL population in the region by increased predation. Water in evaporation ponds; the creation of new perching/roosting/nesting sites; water ponding due to dust suppression; and construction/operation waste have been identified as raven attractants and subsidies. The potential effects to FTHL populations and other species resulting from operation of the IVS project evaporation ponds are discussed later in this section. Effects and mitigation for the remaining three factors are discussed below.

Perching, Roosting, and Nesting Sites

Most raven predation on FTHL is thought to take place during the spring, most likely by breeding birds that spend most of their time foraging within 1,300 ft of their nests. Therefore, IVS structures such as towers, transmission poles and lines, maintenance buildings, and facility fencing offer new nesting and/or perching substrates could facilitate increased risk of predation to FTHL populations by avian predators. The applicant has proposed project design features to reduce nesting and includes physical deterrents to nesting such as bird spikes and nest removal, and monitoring to make sure these design features were working as intended. These measures are described in detail in Mitigation Measure BIO-12, which describes development of the Raven Monitoring and Management Plan.

Ponding

During construction, water would be applied to the graded areas, construction right-of-way, dirt roads, trenches, spoil piles, and other areas of ground disturbance to minimize dust emissions and topsoil erosion. Ponding water resulting from these dust suppression activities has the potential to attract ravens and other predators of FTHL, thereby potentially resulting in increased FTHL predation. As described in Mitigation Measure BIO-8, this potential effect would be minimized by using the minimal amount of water needed for dust abatement.

Food Waste

Ravens are scavengers that forage at landfills, dumpsters behind restaurants and grocery stores, open garbage drums and plastic bags placed on the curb for garbage pickup, and on roadkills. Both construction and operation of the IVS would result in increased waste generation in the project area with improper management of food waste potentially attracting ravens. This potential effect can be avoided with implementation of measures described in Mitigation Measure BIO-8. This measure requires that all food-related waste be placed in self-closing containers and removed daily from the site, and that plastic bags containing trash not be left out for pickup. In addition, to discourage scavenger activity, animal roadkills would be promptly removed from the project site.

To reduce the effects of increased avian predator presence at the IVS project site, the applicant has prepared a draft Raven Monitoring and Management Plan and has recommended impact avoidance and minimization measures, which are incorporated into Mitigation Measure BIO-12. Mitigation Measure BIO-12 specifies that the applicant complete a final Raven Management and Monitoring Plan in consultation with BLM and USFWS. Mitigation Measure BIO-12 would reduce the severity of effects that ravens and other avian predators would have on FTHL numbers through reducing access to anthropogenic food and water resources (subsidies) and discouraging nesting and roosting. This measure would also include the adaptive management of raven management measures should adopted measures become ineffective in controlling predation on FTHL. These measures have been applied on past projects with desert tortoise as prey items and have been modified for the FTHL.

The BLM anticipates that the applicant would be able to produce a final Raven Monitoring and Management Plan that would meet the approval of BLM, CDFG, USFWS well before licensing of the IVS project and updated in the FEIS.

Although implementation of the identified mitigation measures would reduce the severity of affects on the FTHL from avian predators, the IVS project is likely to adversely affect FTHL.

Other Predators

In addition to avian predators, roundtail ground squirrels (*Spermophilus tereticaudus*) are known predators of the FTHL. A potential effect of the SunCatchers is increased vegetation growth as a result of shade and water from the periodic washing beneath those structures. Even though roundtail ground squirrels were not observed on the project site, they are known to occur in the project area. The higher density of vegetation, specifically perennials, could attract roundtail ground squirrels that may not have previously been sustained under the current arid conditions. The possibility of roundtail ground squirrels inhabiting the site would also increase predator species which prey on them, and in turn, could also prey on FTHLs. Implementation of Mitigation Measures BIO-8 and BIO-18, would reduce the severity of these effects. Mitigation Measure BIO-8 includes minimizing soil disturbance and maintaining a vehicle wash with inspection stations to prevent the spread of potential invasive weeds. Mitigation Measure BIO-18 includes measures to minimize effects from noxious weeds through the reestablishment of vegetation on disturbed sites with native seed mixes that are weed free. This measure also includes the monitoring and rapid implementation of control measures to ensure early detection and eradication for noxious weed invasions. Controlling the establishment of roundtail ground squirrels would also discourage foraging at the site by predators of the ground squirrel that could potentially opportunistically prey on FTHL, thereby decreasing predation rates on FTHL.

Although implementation of the identified mitigation measures would reduce the severity of affects on the FTHL from other FTHL predators, the IVS project is likely to adversely affect FTHL.

Evaporation Pond

The IVS project would include two 2,500,000-gallon (gal) evaporation ponds that would collect wastewater from the reverse osmosis water treatment system. Each evaporation pond would be one acre in size.

The creation of a new water source in an area where water is scarce would attract predators to the IVS project site, potentially increasing predation rates on FTHL. Additionally, waterfowl, shorebirds, and other resident or migratory birds that drink or forage at the ponds might be harmed by hyper-saline conditions resulting from the high total dissolved solids (TDS) concentrations. Monitoring results from summer 2007 at Harper Lake Solar Electric Generating System in the Mojave Desert revealed numerous waterfowl deaths at the evaporation ponds due to salt toxicosis. The Harper Lake ponds are similar to those proposed by for the IVS project. As such, the proposed evaporation ponds for the IVS project and the associated risk to birds are a source of significant concern. In addition, the location of the evaporation ponds near

the proposed transmission towers on the project site could result in an increase of avian collisions with the transmission towers as birds may be attracted to the evaporation ponds.

As the evaporation ponds create an attractive nuisance for wildlife, a possible project design feature would be locating the evaporation ponds away from potential collision sites, such as the transmission towers. Other project design features proposed would include construction of exclusionary fencing and installation of netting to cover the evaporation ponds. These project design features have been incorporated as Mitigation Measure BIO-13. In addition to the installation of the fencing and netting, the evaporation ponds would be monitored should any corrective action be needed. Implementation of measures which exclude wildlife from evaporation ponds is preferable to allowing wildlife access to the hyper-saline conditions in the pond water, which has been known to cause death in water fowl.

Implementation of the identified mitigation measures would reduce the severity of affects on the birds attracted to the evaporation ponds. Therefore, the IVS project is not likely to adversely affect birds in regards to evaporation pond mortality.

Increased Risk from Roads/Traffic

Vehicle traffic would increase as a result of IVS project construction and improvement of access roads, resulting in an increase in the risk of injuring or killing FTHL and other wildlife. Construction of the IVS project would be completed over an estimated 40-month period, with a peak at Month 7 of approximately 731 workers per day. Assuming an average of 240 construction personnel vehicles with 1.5 passengers each, it is anticipated an average of approximately 405 workers per day would be on site over the course of construction. Construction is also forecast to generate an average of approximately 270 total one-way vehicle trips per day, mainly from trucks, with a peak of approximately 529 trips per day. During operation approximately 60 trucks, 4 forklifts, and 7 man lifts would be in use continuously throughout a 24-hour period. In addition, 5 delivery truck trips per week are expected, with an estimate of vehicular traffic from 100 workers and 8 visitors on a daily basis.

The potential for increased traffic-related FTHL mortality is greatest along unpaved roads between the rows of SunCatchers, although FTHL on paved roads may also be affected due to increased vehicle frequency and higher speed.

Implementation of Mitigation Measure BIO-8 will minimize the risks of increased traffic fatality and other hazards associated with roads at the IVS project site. These measures include confining vehicular traffic to and from the project site to existing routes of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposing a speed limit of 15 miles per hour (mph) on routes within the project site for the life of the project. In addition,

Mitigation Measure BIO-9 would require the presence of Biological Monitors to be on site during construction and to remove FTHLs from harm's way. Similar measures have been applied on past projects and have shown that they reduce effects on wildlife from traffic mortality.

However, although implementation of the identified mitigation measures would reduce the severity of affects on the FTHL from traffic activities, the IVS project is likely to adversely affect FTHL.

Collisions and Electrocution

Birds and bats are known to collide with communication towers, transmission lines, and other elevated structures. The tallest structures at the plant site would be the assembly building, which would be approximately 78 ft tall. All other structures, except for the transmission line support structures, are 50 ft or less in height. Two types of transmission line towers are proposed for use in the IVS project. The 71-ft H-frame towers would be placed at the undercrossing of the existing 500-kilovolt (kV) transmission line, whereas the double-circuit lattice steel towers and/or steel poles (at a height of 90 to 110 ft), would be used elsewhere. These structures at the IVS project site are unlikely to pose a collision risk because they are shorter than those typically associated with bird collision events and do not require guy wires. The number of birds that use native habitat in the project area would be even lower after the solar fields are built as the patchy habitat would only attract birds that are adapted to living under disturbed conditions and in proximity to development. Because the evaporation ponds create an attractive nuisance, to decrease the collision and electrocution risk for birds, the evaporation ponds will be located away from the transmission towers. This project design feature has been incorporated as Mitigation Measure BIO-13.

Large raptors such as golden eagles (*Aquila chrysaetos*) can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between these elements. The proposed transmission lines would be 230 kV. To minimize risk of electrocution, it is recommended that "raptor-friendly" construction design be used for the transmission line. This would include the conductor wire spacing to be greater than the wingspans of large birds to help prevent electrocution as described in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006).

Implementation of the identified mitigation measures would reduce the severity of the IVS project's potential electrocution or collisions effects on large raptors in the project area. Therefore, the IVS project is not likely to adversely affect raptors in regards to this issue.

Lighting

Lighting plays a significant role in collision risk with tall towers because lights can attract nocturnal migrant songbirds. In addition, major bird kill events have been reported at lighted communications towers, with most kills from towers higher than 300 ft. IVS project operations would require onsite nighttime lighting for safety and security, which can disturb nocturnal wildlife. To reduce offsite lighting effects to wildlife, the applicant has proposed the lighting at the IVS project facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded and lights would be directed onsite so that light or glare would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting is not required for normal operation, safety, or security; this would allow these areas to remain dark most of the time thereby minimizing the amount of lighting potentially visible offsite. The measures are described in Mitigation Measure VIS-2. The IVS project is not likely to adversely affect wildlife in regards to new lighting sources in the project area.

Noise

Noise from construction activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the project area. This is considered to be a direct but temporary effect. Many bird species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction could disturb nesting birds and other wildlife and adversely affect nesting and other activities. The BLM sensitive wildlife species most likely to be affected by noise are the burrowing owl and FTHL.

As discussed in Section 4.10, Noise and Vibration, a maximum construction noise level of 74 dBA L_{dn} is estimated to occur at a distance of 3,300 ft from the acoustic center of the construction activity (the Main Services Complex). This noise level is expected to attenuate to 58 dBA L_{eq} or less at the closest sensitive receptor 3,300 ft west of the project site boundary. The loudest noise likely to occur with IVS project construction is created by the operation of construction equipment. Depending on the type of equipment used, the noise produced can vary from 77 dBA to 90 dBA at 50 ft from the noise source. To minimize noise levels from project equipment, the applicant has proposed various noise-reducing features, such as mufflers on internal combustion engines, air-inlet silencers, shrouds, or shields, which have been incorporated into Mitigation Measure NOISE-6. Similar measures have been applied on past projects and have shown that they are effective in minimizing noise effects on wildlife. The IVS project is not likely to adversely affect wildlife in regards to construction noise in the project area.

Dust

Direct temporary effects associated with disturbance of the soil's surface caused by construction traffic and other activities would result in increased wind erosion of the soil. Aeolian transport of dust and sand can result in the degradation of soil and vegetation over a widening area. Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities. The destruction of plants and soil crusts by windblown sand and dust exacerbates the erodibility of the soil and accelerates the loss of nutrients.

Soil erosion from construction activities and vehicle activity, which affects vegetation and soil properties, could have an adverse affect on both foraging and burrowing potential for FTHL. The applicant has proposed the use of Soiltac™ as a soil binder in areas where vehicular traffic is anticipated. The effects of increased dust and other construction impacts can be minimized with implementation of Mitigation Measure BIO-8. Measures to minimize dust effects in Mitigation Measure BIO-8 include minimizing vegetation and soil disturbance, limiting the speed limit to 15 mph for vehicular traffic, and applying water to dirt roads. Similar measures have been applied on past projects and have shown that they are effective in minimizing dust effects. It is anticipated that dust effects associated with the operation of the IVS project would be similar to those identified for the construction phase of the IVS project. The IVS project is not likely to adversely affect wildlife in regards to construction and operational dust generation in the project area.

Noxious Weeds

The IVS project may have direct and indirect permanent effects on noxious weeds. Construction and operational activities could further spread weeds already present in the project vicinity, including Sahara mustard, red brome, and Mediterranean schismus. The spread of invasive plants is a major threat to biological resources in the Colorado Desert because non-native plants can displace native plants, increase the threat of wildfire, and supplant wildlife foods that are important to herbivorous species. The BLM requires a Noxious Weed Management Plan as the spread of invasive plants could destroy wildlife habitat and forage, threaten endangered species and native plants, and increase soil erosion and groundwater loss. The Federal government initially recognized the threat caused by invasive plants and established the Federal Noxious Weed Act of 1974 (United States Code 2801 et seq.; 88 Statute 2148) to control the spread of noxious weeds. Federal and state agencies entered into a Memorandum of Understanding (MOU) titled "The Agreement on Biological Diversity" to further the intent of the Federal Noxious Weed Act in 1991. The goal for all parties that entered into the MOU is to minimize the populations of undesirable and noxious plants and to enhance ecosystem natural biodiversity. As a result of the MOU, the management of undesirable plants on Federal and State lands is to be coordinated.

To avoid and minimize the spread of existing weeds and the introduction of new ones, an active weed management strategy and control methods must be implemented. The applicant has proposed a Noxious Weed Management Plan to avoid and minimize the spread of noxious weeds which has been incorporated them into Mitigation Measure BIO-18. The Noxious Weed Management Plan includes discussion of weeds targeted for eradication or control and a variety of weed control measures such as establishing weed wash stations for construction vehicles, rapid implementation of control measures to ensure early detection and eradication for noxious weed invasions, and revegetation of disturbed areas with weed free native seed mix. The Noxious Weed Management Plan also includes on-going management to reduce or eliminate the spread of weeds during operation from facilities including dirt roads. The Corps considers this measure necessary to ensure the function and services of the avoided waters of the U.S. are protected from noxious weed impacts.

Construction and operational activities and related soil disturbance could introduce new noxious weeds to lands adjacent to the IVS project plant site and its linear facilities, resulting in indirect permanent effects. As previously stated, to avoid and minimize the spread of existing weeds and the introduction of new ones, an active weed management strategy and control methods must be implemented. With implementation of the identified mitigation measures, the IVS project is not likely to adversely affect vegetation communities and wildlife habitat in regards to the introduction of noxious weeds in the project area.

Applicant-Proposed Modifications

The applicant-proposed modifications to shift the transmission line, change the hydrogen storage system, and use an alternative water supply for construction and initial operations would not affect biological resources differently than analyzed above for the IVS project. However, the water line alignment was modified slightly to follow the Evan Hewes Highway ROW where feasible to avoid sensitive resources including as many known cultural resources as possible. As a result, two segments of the new alignment fall outside areas previously surveyed for biological resources. Although the shifted segments of the waterline alignment are outside areas surveyed for biological resources for the analysis described above for the original IVS project, the applicant conducted additional general biological resources and botanical surveys for the areas where the line shifted. Those surveys did not detect any special interest plant species in the area for the proposed realignments. Additional FTHL surveys were also conducted along the proposed waterline realignments. Those survey data show that FTHL were not observed along the realigned segments of the water pipeline. As a result, based on the FTHL surveys conducted along the proposed waterline realignments, the realignments will not result in adverse effects to FTHL. The realignments of the water pipeline are relatively minor and the results of the biological resources analysis of those realignments are that no adverse effects to

biological resources are anticipated to occur as a result of the realignments. There were no substantive differences in the resources observed on the realigned segments of the pipeline compared to the alignment analyzed above for the original IVS project. In summary, given that the overall design and function of the realigned waterline for the IVS project are essentially the same as what was evaluated for the waterline in the original IVS project, it is expected that the environmental consequences associated with the proposed waterline alignment modifications would be similar to those identified for the waterline as evaluated for the original IVS project.

Project Closure/Decommissioning Effects

Vegetation

No additional adverse effects impacts are expected to occur to special-status vegetation communities from decommissioning/plant closure activity as the removal of vegetation communities would have already occurred with the construction and operation of the IVS project. Closure and decommissioning would require additional construction vehicles and some surface disturbance associated with the removal of project facilities and structures. Closure and decommissioning activities would be subject to the BLM regulations and standards existing at the time of the closure and decommissioning activities. The applicant would notify the BLM and coordinate its closure and decommissioning activities with the BLM at that time. However, if additional effects on vegetation communities are identified as a result of decommissioning/plant closure activities, Mitigation Measures BIO-08 and BIO-18 would be implemented. Therefore, although the IVS project would affect vegetation communities, this action is not likely to adversely affect vegetation communities with implementation of the identified mitigation measures.

United States Army Corps of Engineers Waters of the United States and California Department of Fish and Game Jurisdictional Streambeds

Permanent effects to the ephemeral streams would have already occurred during the construction of the IVS project. The underground electrical collection system, the hydrogen distribution system, and a 428-ft length of the reclaimed waterline in the ephemeral streams would be removed during decommissioning/plant closure. It is anticipated that after the removal of all structures, the ephemeral streams would be recontoured to the original condition. The ephemeral streams would be restored by replanting with native vegetation and maintenance for a minimum of five years. Monitoring and success criteria would need to be function-based,

scientifically defensible, explicit, and measurable. These measures would be incorporated into the Decommissioning and Reclamation Plan required by Mitigation Measure BIO-20.

The reclaimed water pipeline along Evan Hewes Highway is anticipated to remain in place if the plant is decommissioned, therefore, no new effects are expected from decommissioning/plant closure activities for the pipeline. The IVS project is not likely to adversely affect Corps jurisdictional waters of the U.S. or CDFG jurisdictional streambeds during the decommissioning or closure activities associated with the IVS project.

Special-Status Plants

No effects are expected to occur for special-status plants from decommissioning/plant closure activity as none are expected to be present after construction and operation of the power plant. Special-status plant surveys would be conducted prior to decommissioning/plant closure activity. Should any special-status plants occur on the site, avoidance measures described in Mitigation Measure BIO-19 would be implemented. With implementation of the identified mitigation measure, the IVS project is not likely to adversely affect special-status plant species during decommissioning or closure activities.

Raptors and Migratory/Special-Status Bird Species

The IVS project site does not provide nesting habitat for the golden eagle (*Aquila chrysaetos*). The IVS project site does contain marginal to suitable foraging habitat for golden eagle. The loss of potential golden eagle foraging habitat from implementation of the IVS project would not result in the loss of individual golden eagle, nor is it anticipated to result in adverse effects on golden eagle populations.

The IVS project site does not include any golden eagle nesting habitat, golden eagle nests, golden eagle breeding territory, or golden eagle communal roosts. It is not known if the IVS project site functions as a golden eagle migratory corridor; however, the IVS project would not adversely affect golden eagle migratory patterns.

Construction and operation of the power plant would have eliminated nesting and foraging habitat for many migratory/special-status birds, though western burrowing owls could exist near the periphery of the plant site. Any burrowing owls nesting on the plant site could be directly affected by decommissioning/plant closure activities. Burrowing owl adults, eggs or young could be crushed or entombed, and nesting and foraging activities would be directly and indirectly affected by decommissioning/plant closure activities. To avoid potential effects to burrowing owls that might be nesting within the impact area, surveys would be conducted on the plant site using methods recommended by the CBOC prior to decommissioning/plant closure activities. To

avoid and offset effects to burrowing owls, passive removal would be used. Passive removal involves encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are at least 150 ft from the impact zone and that are within or contiguous to a minimum of 6.5 ac of foraging habitat for each pair of relocated owls. Passive relocation of owls is only implemented during the non-breeding season unless a qualified biologist can verify through non-invasive methods that egg laying/incubation has not begun or juveniles are foraging independently and able to fly. The unoccupied burrows would be collapsed in accordance with CDFG-approved guidelines. Ground-disturbing activities would occur outside the burrowing owl breeding season (February 1 through August 30) with clearance surveys prior to each phase of decommissioning/project closure activity.

In addition, monitoring of burrowing owl burrows within 500 ft of decommissioning/plant closure activities would be conducted. Mitigation Measure BIO-16 requires a temporary noise barrier shall be placed to reduce noise levels near burrows should nesting burrowing owls be within 500 ft of decommissioning/plant closure activities. With implementation of the identified mitigation measure, the IVS project is not likely to adversely affect raptors and migratory or special-status bird species during decommissioning or closure activities.

Special-Status Mammals

Construction and operation of the power plant could result in the elimination of denning and foraging habitat for desert kit fox and American badger. The exclusionary fencing of the plant site would prevent Peninsular bighorn sheep entering the site. However, the site represents a small fraction of the total available habitat within the region for these species. Therefore, no adverse effects are expected from decommissioning/plant closure activities to desert kit fox, badger, and Peninsular bighorn sheep.

Flat-Tailed Horned Lizard

The potential for FTHLs to occur on the plant site is low due to the continual operations activities conducted prior to decommissioning/plant closure. However, should the FTHL be present, decommissioning/plant closure activities could result in direct mortality, injury, or harassment of individuals as a result of encounters with vehicles or heavy equipment. Other direct effects could include individual FTHLs being crushed or entombed in their burrows, collection or vandalism, disruption of FTHL behavior during decommissioning/plant closure activities, and disturbance by noise or vibrations from the heavy equipment.

Measures from the issuance of a Conference Opinion from the USFWS (or Biological Opinion if the FTHL are Federally listed) would be incorporated into Mitigation Measure BIO-9, which

identifies the FTHL removal protocol that would be utilized. In addition, Mitigation Measures BIO-11 would require the Designated Biologist to verify for the BLM that all FTHL avoidance, minimization, and compensatory measures have been implemented.

Although implementation of the identified mitigation measures would reduce the severity of affects on the FTHL, the IVS project is likely to adversely affect FTHL during decommissioning or closure activities.

Avian Predators

The removal of structures such as buildings, transmission towers, and SunCatchers would eliminate perching, roosting, and nesting sites for avian predators of FTHL. Therefore, no adverse effects associated with this issue are expected from decommissioning/plant closure activities.

Other Predators

The decommissioning/plant closure activities would remove sources of food waste and water ponding from mirror washing and dust suppression operational activities that would attract predators of FTHL. Therefore, no adverse effects associated with this issue are anticipated to occur from decommissioning/plant closure activities.

Evaporation Ponds

It is anticipated that the evaporation ponds would be removed as part of the decommissioning/ plant closure activities for the IVS project. Any recontouring that would occur with the remediation of the evaporation ponds would be required to implement Mitigation Measure BIO-8. With the implementation of Mitigation Measure BIO-8, no adverse effects would occur from decommissioning/plant closure activities.

Increased Risk from Roads/Traffic

Vehicle traffic associated with the decommissioning/plant closure activity is anticipated to be similar to that identified for construction activities associated with the IVS project. Decommissioning activities would involve the removal of structures and infrastructure on the project site, resulting in an increase in the risk of injuring or killing FTHL and other wildlife.

The decommissioning of the IVS project would require the use of construction equipment and construction personnel traveling to and from the project area. The potential for increased traffic-related FTHL mortality is greatest along unpaved roads in between the rows of SunCatchers,

although FTHL on paved roads may also be affected due to increased vehicle frequency and higher speed.

Implementation of Mitigation Measure BIO-8 will minimize the risks of increased traffic fatality and other hazards associated with roads at the IVS project site. These measures include confining vehicular traffic to and from the project site to existing routes of travel and prohibiting cross country vehicle and equipment use outside designated work areas for the life of the project. In addition, Mitigation Measure BIO-9 would remove FTHLs to the maximum extent practicable during construction. Similar measures have been applied on past projects and have shown that they reduce effects on wildlife from traffic mortality. Although implementation of the identified mitigation measures would reduce the severity of affects on the FTHL, the IVS project is likely to adversely affect FTHL during decommissioning or closure activities.

Collisions and Electrocution

The removal of transmission towers will eliminate collision and electrocution hazards to birds and bats. Therefore, no adverse effects associated with this issue would occur from the decommissioning or plant closure activities.

Lighting

The decommissioning/plant closure activities would result in the removal of lighting infrastructure from the project site. No adverse effects are expected to occur from the decommissioning of the IVS project.

Noise

Noise from decommissioning/project closure activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the project site. Many bird species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from the closure activities could disturb breeding or nesting birds and other wildlife and adversely affect nesting and other activities. The wildlife species most likely to be affected by noise are the burrowing owl, FTHL, Peninsular bighorn sheep, loggerhead shrike, and Le Conte's thrasher.

The effects from decommissioning/project closure activities would be similar to construction activities, with the loudest noise created by the operation of the equipment. Mitigation Measure NOISE-6 includes various noise-reducing features, such as mufflers on internal combustion engines, air-inlet silencers, shrouds, or shields. Similar measures have been applied on past projects and have shown that they are effective in minimizing noise effects impacts on wildlife.

Therefore, the IVS project is not likely to adversely affect wildlife in regards to noise associated with decommissioning or closure activities in the project area.

Dust

Disturbance of the soil surface caused by decommissioning/project closure traffic and other activities would result in increased wind erosion of the soil. Aeolian transport of dust and sand can result in the degradation of soil and vegetation over a widening area. Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities. The destruction of plants and soil crusts by windblown sand and dust exacerbates the erodibility of the soil and accelerates the loss of nutrients. Soil erosion from decommissioning/ project closure activities and vehicle activity would affect vegetation and soil properties. Mitigation Measure BIO-8 includes minimizing vegetation and soil disturbance, limiting the speed limit to 15 mph for vehicular traffic, and applying water to dirt roads. The applicant has proposed the use of Soiltac™ as a soil binder in areas where vehicular traffic is anticipated. Similar measures have been applied on past projects and have shown that they are effective in minimizing dust impacts. Therefore, the IVS project is not likely to adversely affect wildlife in regards to dust generated from decommission or closure activities in the project area.

Noxious Weeds

The water that was originally used during plant operations would no longer be available for the propagation of noxious weeds. However, decommissioning/project closure activities and associated soil disturbance could introduce new noxious weeds to lands adjacent to the IVS project plant site and could further spread weeds already present in the project vicinity. Mitigation Measure BIO-18 serves to avoid and minimize the spread of noxious weeds. The Noxious Weed Management Plan includes a discussion of weeds targeted for eradication or control and a variety of weed control measures such as establishing weed wash stations for vehicles, rapid implementation of control measures to ensure early detection and eradication for noxious weed invasions, and revegetation of disturbed areas with weed free native seed mixes. Implementation of Mitigation Measure BIO-18 would reduce potential effects associated with the spread of noxious weeds. With implementation of the identified mitigation measure, the IVS project is not likely to adversely affect vegetation communities and wildlife habitat in regards to the introduction of noxious weeds in the project area during decommission and closure activities.

Applicant-Proposed Modifications

The applicant-proposed modifications to the transmission line, the water pipeline, the hydrogen storage system, and the alternative water supply during construction and initial operations would not result in changes in the impacts on biological resources during decommissioning. This is because these project features would be decommissioned and removed similar to the decommissioning and removal of project features as evaluated for the original IVS project.

4.3.4.2 709 MW Alternative: Agency Preferred Alternative

Direct effects are those effects that result from a project and occur at the same time and place. Indirect effects are caused by the IVS project, but can occur later in time or farther removed in distance while still reasonably foreseeable and related to the project. The potential effects discussed in this analysis are those most likely to be associated with construction and operation of the IVS project as described in the previous section.

Impact analyses typically characterize effects to plant communities as temporary or permanent, with a permanent effect referring to areas that are paved or otherwise precluded from restoration to a pre-project state. In the desert ecosystems, permanent effects reflect the slow recovery rates of its plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the effect. For example, creosote bushes can re-sprout a full canopy within five years after damage from heavy vehicle traffic, but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery may require over 3,000 years. In this analysis, an effect is considered temporary only if there is evidence to indicate that pre-disturbance levels of biomass, cover, density, community structure, and soil characteristics could be achieved within 5 years.

The Agency Preferred Alternative would result in biological impacts similar to those described in the previous section, except at a slightly reduced amount, because of the slight reduction in the area disturbed on site and in the number of SunCatchers. In addition, this alternative specifically reduces impact to aquatic resources by placing less SunCatchers in the primary desert streambeds on the IVS project site. The measures identified for the IVS project would also apply to the Agency Preferred Alternative.

The short- and long-term impacts of the four applicant-proposed modifications related to biological resources would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.3.4.3 300 MW Alternative

The 300 MW Alternative would provide the same facilities and project components as Phase 1 of the 750 MW IVS project. Compared to the IVS project, the area would be reduced to a 2,577-ac project site on the southwest part of the original project site and would consist of 12,000 SunCatchers, generating 300 MW. The substation would be reduced to 300 MW capacity; however, the linear transmission line and water pipeline routes would remain the same.

The general setting and existing conditions for the 300 MW Alternative would be similar to the conditions for the IVS project although the land requirements would be proportionately reduced to reflect the smaller project size. For the 300 MW Alternative, all the ephemeral streams except one have connections to Coyote Wash north of the site. The one ephemeral stream is along the southern edge on the east side of the project site and connects to other ephemeral streams which flow northeast toward the Westside Main Canal.

The 300 MW Alternative would permanently affect a total of 2,577 ac of Sonoran creosote bush scrub habitat including the OHV and dirt roads. Mitigation for impacts to vegetation communities resulting from the 300 MW Alternative would be the same as mitigation proposed under the IVS project (i.e., Mitigation Measures BIO-8, BIO-10, BIO-18, and BIO-19).

As with the IVS project, the 300 MW Alternative could result in potential effects to individual FTHL, as well as permanent loss of approximately 2,577 ac of FTHL habitat. Similar to the IVS project, other potential impacts to FTHL resulting from the 300 MW Alternative include increased risk of predation, increased road kill hazard from construction and operational traffic, fragmentation of habitat, and loss of connectivity. The mitigation compensation for effects to FTHL habitat on the plant site would be reduced to 2,577 ac at a 1:1 mitigation ratio.

The off-site transmission line compensation for impacts to FTHL habitat would remain the same as the IVS project. Additional mitigation for effects to FTHL would be the same as those for the IVS project and include Mitigation Measures BIO-8, BIO-9, BIO-10, and BIO-11.

Similar to the IVS project, the ephemeral streams would be affected directly and indirectly by construction and operation of the SunCatchers and associated infrastructure as described earlier in the section discussing waters of the U.S. and CDFG jurisdictional streambed effects. However, the total permanent and temporary effects would be decreased under the 300 MW Alternative due to the reduction in project acreage.

For the plant site, permanent effects to waters of the U.S. and CDFG jurisdictional streambeds would be reduced to 63 ac versus the IVS project's 165 ac of permanent effects. Temporary effects to waters of the U.S. and CDFG jurisdictional streambeds would be 5 ac for the 300 MW Alternative, the same as under the IVS project. Under the 300 MW Alternative, approximately

109,376 lf of jurisdictional waters would be permanently affected and 5,116 lf of jurisdictional waters would be temporarily affected on the project site. Mitigation for effects to waters of the U.S. and CDFG jurisdictional streambeds resulting from the 300 MW Alternative would be similar to mitigation proposed under the IVS project (i.e., Mitigation Measures BIO-8 and BIO-17).

While there would be an overall decrease in permanent acreage effects to waters of the U.S. and CDFG jurisdictional streambeds, 6 of the 8 primary drainages would be directly affected by the development of the 300 MW Alternative. This would cause the disruption of the physical (e.g., hydrological and sediment transport), chemical, and biological functions and processes of the ephemeral streams. The use of ephemeral streams as a movement corridor for wildlife would still be disrupted under the 300 MW Alternative.

Although the 300 MW Alternative would result in reduced effects to American badger and desert kit fox habitat compared to the IVS project (from 6063.1 ac to 2,577 ac), effects to these species due to loss and fragmentation of habitat and loss of foraging grounds would still occur. In addition, crushing or entombing these animals during construction could potentially occur. Mitigation for these effects to the American badger and desert kit fox impacts have been incorporated into Mitigation Measure BIO-15. Impacts to wildlife, including western burrowing owl, California horned lark, Le Conte's thrasher, or other special-status species under the 300 MW Alternative would be reduced as compared to the IVS project due to the reduction in the amount of Sonoran creosote scrub habitat that would be removed. However, the loss of nests, eggs, or young of these bird species could still occur. Under the 300 MW Alternative, the loss of breeding and foraging habitat on the site as well as disturbance of nesting and foraging activities near the site and linear facilities would also still occur. Mitigation for these effects would be through the implementation of Mitigation Measures BIO-8 and BIO-14. Potential effects to burrowing owls would be further mitigated by Mitigation Measure BIO-16.

Several special-status plant species have the potential to occur within the project area, although none were observed within the project area. The 300 MW Alternative could potentially result in direct or indirect effects to special-status plant species from construction activities and fragmentation of habitat. Mitigation for these potential effects would be similar to those identified for the IVS project (i.e., Mitigation Measures BIO-18 and BIO-20).

The effects of evaporation ponds, bird collisions and electrocution would remain the same under the 300 MW Alternative as under the IVS project. It is anticipated that two evaporation ponds would still be needed at the plant site even though the amount of water required to clean the SunCatcher mirrors would be reduced. Plant operations would cycle one pond to fill with reverse osmosis (RO) water for a year and then evaporate the following year. The second pond will be on an alternate schedule so there is always a pond available for receiving RO water and

another to allow evaporation of RO water. Mitigation for effects associated with this would be the same as mitigation under the IVS project (i.e., Mitigation Measures BIO-8 and BIO-13).

Effects from an increase in road usage and traffic levels would be proportionately reduced with the smaller project size. Mitigation for effects associated with this would be the same as mitigation under the IVS project (i.e., Mitigation Measure BIO-8).

The short- and long-term impacts of the four applicant-proposed modifications related to biological resources would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.3.4.4 Drainage Avoidance #1 Alternative

The Drainage Avoidance #1 Alternative would prohibit permanent effects within 10 primary drainages located within the IVS project site boundary. The Drainage Avoidance #1 Alternative would have the same outer project boundary as the IVS project, but would prohibit installation of permanent structures within the ephemeral streams, thereby reducing the developed area from 6,063.1 ac to 4,690 ac. This reduction in area would result in the reduction of generation capacity from 750 MW under the IVS project to 632 MW (84 percent of the proposed generation capacity). Rather than installation of 30,000 SunCatchers as identified under the IVS project, 25,000 SunCatchers would be installed.

The Drainage Avoidance #1 Alternative would affect 4,690 ac of Sonoran creosote bush scrub habitat compared to the IVS project, which impacts 6,063.1 ac of Sonoran creosote bush scrub habitat. Mitigation for effects to vegetation communities resulting from the Drainage Avoidance #1 Alternative would be the same as mitigation under the IVS project.

The compensation approach for effects to FTHL habitat under the Drainage Avoidance #1 Alternative for the plant site would remain the same as identified for the IVS project (6,063.1 ac at a 1:1 mitigation ratio). The off-site transmission line compensation for effects to FTHL habitat under the Drainage Avoidance #1 Alternative would also remain the same as identified for the IVS project. Other potential effects to FTHL resulting from the Drainage Avoidance #1 Alternative would be similar to the IVS project. These potential effects include increased risk of predation, increased road kill hazards from construction and operational traffic, fragmentation of habitat, and loss of connectivity.

As previously stated, compensation for effects to vegetation communities and FTHL would be the same as those identified for the IVS project and are Mitigation Measures BIO-8, BIO-10, BIO-11, BIO-18, and BIO-19.

Under the Drainage Avoidance #1 Alternative, 10 primary ephemeral washes would not be directly affected by operation of the SunCatchers and associated infrastructure as described earlier in the section discussing waters of the U.S. and CDFG jurisdictional streambed effects**.** However, site grading/recontouring, construction of roads, Arizona crossings, bank stabilization features (i.e., rip-rap, retaining walls, gabions), and storm drain outfall structures would still be constructed under the Drainage Avoidance #1 Alternative and would affect the ephemeral streams. These effects would be the same as identified for the IVS project.

Overall, the Drainage Avoidance #1 Alternative would result in a substantial decrease in permanent effects to waters of the U.S. and CDFG jurisdictional streambeds (from 165 ac to 48 ac) and a decrease in temporary effects (from 5 ac to no impacts). As a result, mitigation for effects to waters of the U.S. and CDFG jurisdictional streambeds would decrease compared to the IVS project. The use of ephemeral streams as a movement corridor for wildlife would not be disrupted in the Drainage Avoidance #1 Alternative.

Mitigation for impacts to waters of the U.S. and CDFG jurisdictional streambeds resulting from the Drainage Avoidance #1 Alternative would be similar to mitigation identified for the IVS project. These include Mitigation Measures BIO-8 and BIO-17.

Under the Drainage Avoidance #1 Alternative, the amount of Sonoran creosote scrub habitat affected would be less when compared to the IVS project. Because less habitat would be affected, impacts to western burrowing owl, loggerhead shrike, California horned lark, Le Conte's thrasher, or other special-status birds who use this habitat would be slightly reduced under the Drainage Avoidance #1 Alternative when compared to the IVS project. However, the loss of nests, eggs, or young could still potentially occur under the Drainage Avoidance #1 Alternative. Similar to the IVS project, the loss of breeding and foraging habitat as well as disturbance of nesting and foraging activities near the site and linear facilities would still occur under the Drainage Avoidance #1 Alternative.

Mitigation for these impacts would be the same as those identified for the IVS project. These include Mitigation Measures BIO-8 and BIO-14 which would avoid these potentially significant effects to nesting birds. Potential effects to burrowing owls would be further mitigated by Mitigation Measure BIO-16.

Several special-status plant species have the potential to occur within the project area, although none were observed within the project area. The Drainage Avoidance #1 Alternative could potentially result in direct or indirect effects to special-status plant species from construction and fragmentation of habitat. Mitigation for these potential effects would be similar to those identified for the IVS project. These include Mitigation Measures BIO-18 and BIO-19.

The effects of evaporation ponds, bird collisions and electrocution would remain the same those identified for the IVS project because the transmission line would not change with the Drainage Avoidance #1 Alternative. BLM assumes that two evaporation ponds would still be needed at the plant site although the need for water to clean the SunCatcher mirrors would be reduced under the Drainage Avoidance #1 Alternative. Plant operations would cycle one evaporation pond to fill with RO water for a year and then evaporate the following year. The second evaporation pond will be on an alternate schedule so there is always an evaporation pond available for receiving RO water and another to allow evaporation of RO water. Mitigation for effects associated with the evaporation ponds would be the same as mitigation identified for the IVS project. These include Mitigation Measures BIO-8 and BIO-13.

Under the Drainage Avoidance #1 Alternative, the effects from roads and traffic would be reduced with the decrease in the number of SunCatchers. Mitigation for effects associated with these issues would be the same as mitigation identified for the IVS project. This includes Mitigation Measure BIO-8.

The short- and long-term impacts of the four applicant-proposed modifications related to biological resources would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.3.4.5 Drainage Avoidance #2 Alternative

The Drainage Avoidance #2 Alternative would eliminate development in the easternmost and westernmost parts of the IVS project site, where the largest drainage complexes are located. The Drainage Avoidance #2 Alternative would reduce the overall size of the project site by approximately 50 percent (from 6,063.1 ac to 3,153 ac). It also would reduce the generation capacity from 750 to 423 MW (retaining only about 32 percent of the number of SunCatchers). In the Drainage Avoidance #2 Alternative, permanent structures would be allowed within all ephemeral streams inside the revised, smaller project site boundary.

The Drainage Avoidance #2 Alternative would permanently affect 3,153 ac of Sonoran creosote bush scrub compared to the IVS project, which would affect 6,063.1 ac of Sonoran creosote bush scrub habitat. Mitigation for effects to vegetation communities resulting from the Drainage Avoidance #2 Alternative would be the same as mitigation identified for the IVS project. These include Mitigation Measures BIO-8, BIO-10, BIO-18, and BIO-19.

As with the IVS project, the Drainage Avoidance #2 Alternative could result in potential affects to individual FTHL and the permanent loss of approximately 3,153 ac of FTHL habitat. Other

potential effects to FTHL resulting from the Drainage Avoidance #2 Alternative would be similar to those identified for the IVS project. These potential effects include increased risk of predation, increased road kill hazards from construction and operational traffic, fragmentation of habitat, and loss of connectivity.

The mitigation compensation for effects to FTHL habitat on the plant site would be reduced to 3,153 ac at a 1:1 mitigation ratio. The off-site transmission line compensation for effects to FTHL habitat would remain the same as that identified for the IVS project. Mitigation for effects to FTHL would be the same as those identified for the IVS project. These include Mitigation Measures BIO-8, BIO-9, BIO-10, and BIO-11.

Under the Drainage Avoidance #2 Alternative, only the central part of the IVS project site would be developed. The Drainage Avoidance #2 Alternative would avoid three primary and three secondary ephemeral streams at the west end of the IVS project site and three primary and several secondary ephemeral streams at the east end of the IVS project site**.** The ephemeral streams in the central part of the project site would be affected directly and indirectly by construction and operation of the SunCatchers and associated infrastructure as described earlier in the section discussing waters of the U.S. and CDFG jurisdictional streambed effects.

The Drainage Avoidance #2 Alternative would result in 71 ac of permanent effects and 1 ac of temporary effects to waters of the U.S. and CDFG jurisdictional streambeds. When compared to the IVS project (which would result in 165 ac of permanent effects and 5 ac of temporary effects to waters of the U.S. and CDFG jurisdictional streambeds), there would be a substantial decrease in effects under the Drainage Avoidance #2 Alternative. Mitigation for effects to waters of the U.S. and CDFG jurisdictional streambeds resulting from the Drainage Avoidance #2 Alternative would be the same as those recommended for the IVS project. These include Mitigation Measures BIO-8 and BIO-17).

Although there would be a decrease in acreage effects to wildlife habitat, the use of ephemeral streams as a movement corridor for wildlife in the central part of the site would still be disrupted under the Drainage Avoidance #2 Alternative.

The Drainage Avoidance #2 Alternative would result in reduced effects on American badger and desert kit fox habitat compared to the IVS project (from 6063.1 to 3,153 ac). Effects to these species would result from the loss and fragmentation of habitat and foraging grounds. In addition, crushing or entombing these animals during construction could potentially occur. Mitigation for these effects would be the same as that identified for the IVS project (i.e., Mitigation Measure BIO-15).

As previously stated, the Drainage Avoidance #2 Alternative would result in a reduction of Sonoran creosote scrub habitat that would be affected. Because the amount of habitat affected is reduced, effects to western burrowing owl, loggerhead shrike, California horned lark, Le Conte's thrasher, or other special-status birds that use this habitat would also be reduced under the Drainage Avoidance #2 Alternative compared to the IVS project. However, the loss of nests, eggs, or young could potentially occur under the Drainage Avoidance #2 Alternative. In addition, loss of breeding and foraging habitat as well as disturbance of nesting and foraging activities near the site and linear facilities would still occur.

Mitigation for these effects would be the same as for the IVS project. These include Mitigation Measures BIO-8 and BIO-14 which would avoid potentially adverse effects to nesting birds. In addition, potential effects to burrowing owls would be further mitigated by Mitigation Measure BIO-16.

Several special-status plant species have the potential to occur within the project area, although none were observed within the project area. The Drainage Avoidance #2 Alternative could potentially result in direct or indirect effects to special-status plant species from construction and fragmentation of habitat. Mitigation for these potential effects would be similar to those identified for the IVS project. These include Mitigation Measures BIO-18 and BIO-19.

The effects of evaporation ponds, bird collisions and electrocution would remain the same as the IVS project because the transmission line would not change with the Drainage Avoidance #2 Alternative. The BLM assumes that two evaporation ponds would still be needed at the plant site even though the need for water to clean the SunCatcher mirrors would be reduced under the Drainage Avoidance #2 Alternative. Plant operations would cycle one evaporation pond to fill with RO water for a year and then evaporate the following year. The second evaporation pond will be on an alternate schedule so there is always an evaporation pond available for receiving RO water and another to allow evaporation of RO water. Mitigation for effects associated with the evaporation ponds would be the same as mitigation identified for the IVS project. These include Mitigation Measures BIO-8 and BIO-13.

The effects from roads and traffic would also be reduced under the Drainage Avoidance #2 Alternative with the decrease in project acreage. Mitigation for effects associated with these issues would be the same as mitigation identified for the IVS project. This includes Mitigation Measure BIO-8.

The short- and long-term impacts of the four applicant-proposed modifications related to biological resources would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.3.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the proposed IVS project would not be approved by the BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site. BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition. No new structures or facilities would be constructed or operated on the site and there would be no new ground disturbance. As a result, none of the effects to biological resources resulting from construction or operation of the IVS project would occur. No effects to special-status plants and wildlife species would occur and no effects to desert habitat would occur. However, the land on which the project is proposed would become available to other uses that are consistent with the CDCA Plan. This may include another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed in other locations to meet State and Federal mandates. The construction and operation of those projects could have similar effects on biological resources in other locations.

4.3.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the IVS project would not be approved by the BLM. In addition, the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no future solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition. No new structures or facilities constructed or operated on the site and no new ground disturbance would occur. As a result, the biological resources of the site are not expected to change noticeably from existing conditions. Therefore, this No Action Alternative would not result in effects to biological resources. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates. Those projects would have similar effects on biological resources in other locations.

4.3.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the IVS project would not be approved by BLM. However, BLM would amend the CDCA Plan to allow for other solar projects on the site. Because the CDCA Plan would be amended, it is possible the site would be developed with the same or a different solar technology. As a result, effects on biological resources would result from the construction and operation of another solar technology project. It is anticipated that the construction and operation of another solar technology project on site would result in similar biological effects identified for the IVS project. These would likely include effects to special-status plants and wildlife and to desert habitat. Although different solar technologies require different amounts of grading, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in biological resource effects similar to the effects identified for the IVS project.

4.3.5 Cumulative Effects

The cumulative study area and cumulative projects considered in this analysis were described in detail earlier in Section 2.10, Overview of the Cumulative Impacts Analysis.

The geographic area considered for cumulative impacts on biological resources is FTHL habitat in California. The historical range of the FTHL in California encompassed approximately 1.8 to 2.2 million ac mainly in Imperial County, but also in central Riverside and eastern San Diego counties, but is now reduced to approximately 50 percent of its historical range.

Approximately 50 percent of the historical range of FTHL has been destroyed mainly by agricultural and urban development. Agricultural practices, particularly irrigation, have altered some FTHL habitat to such a degree to be unsuitable for the species. The agricultural and urban development has also affected other wildlife and native plants by reducing native habitat. Other projects and activities that have reduced the range of FTHL in the Imperial Valley include the United States Gypsum Corporation (Plaster City) processing plant north of the IVS project site along Evan Hewes Highway; sand and gravel operations north of Evan Hewes Highway, 5 mi west of Ocotillo, and east of the project site; OHV use at the Plaster City Open OHV Area north of Evan Hewes Highway and limited use on designated routes on the IVS project site; intensive agricultural production and urban development east of the project site; and former sand and gravel operations on the project site in the past, which has been subsequently reclaimed. Eight mi south of the project site, a fence at the United States–Mexico border is currently under construction. That border fence would eliminate the illegal drive-through traffic, thus lessening impacts to FTHL along the border. However, the large scale habitat loss

associated with the currently proposed projects in the area negates FTHL population gains in the region. In this context, the potential of the IVS project to contribute to cumulative effects loss, degradation, and fragmentation of habitat, including loss of connectivity for desert plants and wildlife, including FTHL and other special-status species is assessed.

Biological resources are expected to be affected by reasonably foreseeable future projects development and energy projects as discussed in Section 2.10, Overview of the Cumulative Impacts Analysis. These projects, which are located in FTHL habitat, include all the future foreseeable projects in the Plaster City area listed in Table 2-10 and the following proposed renewable energy projects:

- Bethel Solar Hybrid Power Plant is a proposed 49.4 MW hybrid solar thermal and biomass facility in Seeley.
- Mt. Signal Solar Power Station is a proposed 49.4 MW hybrid solar thermal and biomass facility 8 mi southwest of El Centro.
- TelStar Energies, LLC, is a proposed 300 MW wind energy project west of the IVS project site in Ocotillo Wells.
- Orni 18, LLC, Geothermal Power Plant is a proposed 49.9 MW geothermal facility in Brawley.

Proposed solar and wind energy projects have the potential to further reduce and degrade native plant and animal populations, in particular special-status species such as FTHL.

Most of the cumulative projects, including the projects listed above and the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to biological resources less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects and the types of biological resources on and in the vicinity of the sites for those projects. As a result, the IVS project, when considered in conjunction with those other cumulative projects, is expected to contribute only a small amount to potential short-term cumulative impacts during project construction and decommissioning and to contribute to substantial long-term adverse effects related to biological resources, as discussed in the following sections.

4.3.5.1 Construction Cumulative Effects

The construction of the IVS project is expected to result in short term adverse effects related to construction activities. It is expected that some of the cumulative projects described above which are not yet built may be under construction the same time as the IVS project. As a result, there may be substantial short term cumulative effects during construction of the IVS project and other cumulative projects related to biological resources.

The IVS project would be expected to contribute only a small amount to the possible short term cumulative effects related to biological resources because the proposed mitigation measures described below would minimize and offset the contributions of the IVS project to the cumulative loss of habitat for native plant communities and wildlife, including special-status species. Mitigation Measure BIO-10 requires the applicant to pay for the acquisition of 6,619.9 ac of suitable habitat for FTHL. This habitat would be connected to other suitable habitat for other special-status species, and would offset any habitat loss associated with the IVS project. Mitigation Measures BIO-16 requires protection and passive relocation for burrowing owls and BIO-12 (the Raven Management and Monitoring Plan) includes measures that would address the cumulative regional increases in raven predation on FTHL. Mitigation Measure BIO-19 requires pre-construction surveys and a special-status plant protection plan. Mitigation Measure BIO-17 requires that the effects to the ephemeral streams be mitigated by offsetting cumulative losses to waters of the U.S. and CDFG jurisdictional streambeds. The contribution of the IVS project to cumulative effects will be less than considerable with appropriate levels of compensatory mitigation, when Mitigation Measures BIO-10 and BIO-17 are applied. Similarly, the contribution of the IVS project to the combined effect of the cumulative projects in the FTHL habitat can be mitigated with Mitigation Measures BIO-10 and BIO-17.

4.3.5.2 Operational Cumulative Effects

The operation of the IVS project is expected to result in long term adverse effects related to biological resources. It is expected that some of the cumulative projects described above may be operational at the same time as the IVS project. As a result, there may be substantial long term effects during operation of those cumulative projects related to biological resources.

4.3.5.3 Decommissioning Cumulative Effects

The decommissioning of the IVS project is expected to result in adverse effects related to biological resources similar to construction effects. It is unlikely that the construction or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of this project, because the decommissioning is not expected to occur for

approximately 40 years. As a result, there may not be cumulative effects related to biological resources during decommissioning of the IVS project. As a result, the effects of the decommissioning of the IVS project would not be expected to contribute to cumulative effects related to biological resources. This is due to the biological resources having already been affected by the initial construction and operation of the project. Mitigation Measure BIO-20 would require a Decommissioning and Reclamation Plan for restoration of the native habitat to the site.

4.3.6 Mitigation, Project Design Features, and Other Measures

Mitigation measures described here are solutions to environmental impacts that are applied in the impact analysis to reduce intensity or eliminate the impacts. To be adequate and effective, the Council on Environmental Quality (CEQ) regulations (40 CFR 1508.20) require that mitigation measures fit into one of five categories:

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

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

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

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

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

The following mitigation measures have been identified for the Agency Preferred Alternative and the IVS project.

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) and BLM's Authorized Officer for approval in consultation with CDFG and USFWS. The Designated Biologist must meet the following minimum qualifications:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

- Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and

- At least one year of field experience with biological resources found in or near the project area.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM and BLM's Authorized Officer, in consultation with CDFG and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: The project owner shall submit the specified information at least 90 days prior to the start of any project-related site disturbance activities. No site or related facility activities shall commence until an approved Designated Biologist is available to be on site. If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM and BLM's Authorized Officer at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM and BLM's Authorized Officer to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM and BLM's Authorized Officer for consideration.

BIO-2 The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner, BLM's Authorized Officer, and CPM. The Designated Biologist Duties shall include the following:

- Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;

- Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;

- Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;

- Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

- Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;

- Notify the project owner, BLM's Authorized Officer and the CPM of any non-compliance with any biological resources condition of certification;

- Respond directly to inquiries of BLM's Authorized Officer and the CPM regarding biological resource issues;

- Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report;

- Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and

- Maintain the ability to be in regular, direct communication with representatives of BLM's Authorized Officer, CDFG, USFWS, and CPM, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Database.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the BLM's Authorized Officer and the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries

in the Annual Compliance Report unless their duties cease, as approved by BLM's Authorized Officer and the CPM.

BIO-3 The project owner's BLM and CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to BLM's Authorized Officer and the CPM for approval. The resume shall demonstrate, to the satisfaction of BLM's Authorized Officer and the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks. Specifically, the Biological Monitors shall have experience and are capable of conducting FTHL field monitoring, have sufficient education and field experience to understand FTHL biology, to be able to identify FTHL and desert horned lizards, and their scat, and to be able to identify and follow FTHL tracks where applicable.

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the conditions of certification, BRMIMP, WEAP, and all permits. In addition, Biological Monitor(s) shall take the CDFG and BLM's FTHL training and have their current letter of approval from CDFG.

Verification: The project owner shall submit the specified information to BLM's Authorized Officer and the CPM for approval at least 30 days prior to the start of any project-related site disturbance activities. The Designated Biologist shall submit a written statement to BLM's Authorized Officer and the CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to BLM's Authorized Officer and the CPM for approval at least ten days prior to their first day of monitoring activities.

BIO-4 The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities. The Designated Biologist shall remain the contact for the project owner, BLM's Authorized Officer, and the CPM.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to BLM's Authorized Officer, and the CPM copies of all written reports and summaries that document biological resources activities, including those conducted or monitored by Biological Monitors. If actions may affect biological resources during operation a Biological Monitor, under the supervision of the

Designated Biologist, shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties cease, as approved by BLM's Authorized Officer and the CPM.

BIO-5 The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

If required by the Designated Biologist and Biological Monitor(s) the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

- Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
- Inform the project owner and the construction/operation manager when to resume activities; and
- Notify BLM's Authorized Officer and the CPM if there is a halt of any activities and advise the BLM's Authorized Officer and the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the lead Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies BLM's Authorized Officer and the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify BLM's Authorized Officer and the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure would be made by BLM's Authorized Officer and the CPM within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by BLM's Authorized Officer and the CPM

that coordination with other agencies would require additional time before a determination can be made.

BIO-6 The project owner shall develop and implement an IVS project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from BLM's Authorized Officer, USFWS, CDFG, and the CPM. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

- Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting electronic media and written material, including wallet-sized cards with summary information on special-status species and sensitive biological resources, is made available to all participants;

- Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating sensitive resources and authorized work areas;

- Place special emphasis on FTHL, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;

- Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;

- Present the meaning of various temporary and permanent habitat protection measures;

- Identify whom to contact if there are further comments and questions about the material discussed in the program; and

- Include a training acknowledgment form to be signed by each worker indicating that they received the WEAP training and shall abide by the guidelines.

- The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any project-related site disturbance activities, the project owner shall provide to BLM's Authorized Officer, and the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least ten days prior to site and related facilities mobilization, the project owner shall submit two copies of the BLM- and CPM-approved final WEAP.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation.

Throughout the life of the project, the worker education program shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attend the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to BLM's Authorized Officer and the CMP upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training. During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

BIO-7 The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and submit two copies of the proposed BRMIMP to BLM's Authorized Officer and the CPM (for review and approval) and shall implement the measures identified in the approved BRMIMP.

The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Raven Management Plan, the USFWS Biological Opinion, Burrowing Owl Mitigation and Monitoring Plan, and the Noxious Weed Management Plan, and the Closure Plan and BLM's Record of Decision. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall and shall include the following:

- All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
- All biological resources conditions of certification identified as necessary to avoid or mitigate impacts identified in the Environmental Impact Statement;
- All biological resource mitigation, monitoring and compliance measures required in Federal agency terms and conditions, such as those provided in the USFWS Biological Opinion/Conferencing Opinion and the Federal Clean Water Act (CWA) Section 404 permit;
- All biological resource mitigation, monitoring, and compliance measures required in State agency terms and conditions, such as those provided in the permits or agreements with CDFG;
- All sensitive biological resources to be affected, avoided, or mitigated by project construction, operation, and closure;
- All required mitigation measures for each sensitive biological resource;
- A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
- A Frac-Out Contingency Plan approved by Corps, BLM, CDFG, and the CPM prior to commencement of construction of the reclaimed water pipeline for horizontal directional drilling under the waterways;
- All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
- Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of

project construction. Provide planned timing of aerial photography and a description of why times were chosen. Provide a final accounting of the before/after acreages and a determination of whether additional habitat compensation is necessary in the Construction Termination Report;

- Duration for each type of monitoring and a description of monitoring methodologies and frequency;
- Performance standards to be used to help decide if/when proposed mitigation and conditions are or are not successful;
- All performance standards and remedial measures to be implemented if performance standards are not met;
- A discussion of biological resources-related facility closure measures including a description of funding mechanism(s); and
- A process for proposing plan modifications to the BLM and appropriate agencies for review and approval.

Verification: The project owner shall submit the BRMIMP to the BLM's Authorized Officer and the CPM at least 60 days prior to start of any project-related site disturbance activities. The BRMIMP shall contain all of the required measures included in all biological conditions of certification. No ground disturbance may occur prior to approval of the final BRMIMP by BLM's Authorized Officer and the CPM.

The BLM's Authorized Officer and the CPM, in consultation with other appropriate agencies, would determine the BRMIMP's acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to BLM's Authorized Officer and the CPM within five days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within at least ten days of their receipt by the project owner. Ten days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to BLM's Authorized Officer and the CPM.

The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved BRMIMP to obtain BLM's Authorized Officer and CPM approval. Any changes to the approved BRMIMP

must also be approved by BLM's Authorized Officer and the CPM in consultation with appropriate agencies to ensure no conflicts exist.

Implementation of BRMIMP measures (construction activities that were monitored, species observed) would be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.

BIO-8 The project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize effects to biological resources during construction and operation:

- The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities. Spoils shall be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling shall be minimized. All disturbances, vehicles and equipment shall be confined to the flagged areas. To the extent possible, surface disturbance shall be timed to minimize mortality to FTHL.

- The area of disturbance of vegetation and soils shall be the minimum required for the project. Clearing of vegetation and grading shall be minimized. Whenever possible, rather than clearing vegetation and grading the ROW, equipment and vehicles shall use existing surfaces or previously disturbed areas. Where grading is necessary, surface soils shall be stock-piled and replaced following construction to facilitate habitat restoration.

- To the extent possible, existing roads shall be used for travel and equipment storage. New and existing roads that are planned for construction, widening or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads (e.g. new spur roads associated with both

transmission line options) or the construction zone, the route would be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

- Where feasible and desirable, in the judgment of the lead agency, newly created access routes shall be restricted by constructing barricades, erecting fences with locked gates at road intersections, and/or by posting signs. In these cases, the project proponent shall maintain, including monitoring, all control structures and facilities for the life of the project and until habitat restoration is complete.

- Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 15 miles per hour on the project site.

- Transmission lines, access roads, pulling sites, storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources.

- Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power* Lines (APLIC 2004) to reduce the likelihood of large bird electrocutions and collisions.

- Road surfacing and sealants as well as soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

- Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.

- Parking and storage shall occur where FTHL removal activities have been conducted.

- At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores and other excavations) have been inspected for wildlife prior to backfilling and then backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 slope at the ends to provide wildlife escape ramps, or covered to completely prevent wildlife access. All trenches, bores and other excavations outside the

permanently fenced area shall be inspected each morning and periodically throughout and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a FTHL or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location.

- During construction, examine areas of active surface disturbance periodically—at least hourly when surface temperatures exceed 29°C (85°F) for the presence of FTHL.

- Any construction pipe, culvert, or similar structure or materials with a diameter greater than three inches, stored less than eight inches aboveground for one or more nights, would be inspected for wildlife before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks.

- Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract FTHL predators to construction sites. During construction, a Biological Monitor shall patrol these areas to ensure water related to construction, operations, and maintenance does not puddle and attract common ravens, and other wildlife to the site, and shall make recommendations for reduced water application rates where necessary.

- All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil would be properly contained and disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

- During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife, or bring pets to the project site. Animal roadkills on the project site would be reported by the on-site biologists and promptly removed to

discourage scavenger activity. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

- The project owner shall implement the following Best Management Practices to prevent the spread and propagation of noxious weeds:
- Limit the amount of any vegetation and/or ground disturbance to the absolute minimum, and limit ingress and egress to defined routes;
- Prevent spread of non-native plants via vehicular sources by implementing methods of vehicle cleaning for vehicles coming and going from construction sites. Earth-moving equipment shall be cleaned prior to transport to the construction site. Sediment accumulated from the washing would be shoveled out daily, placed in a sealed container, disposed in an approved landfill; and
- Only weed-free straw, hay bales and seed shall be used for erosion control and sediment barrier installations.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures would be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

BIO-9 The IVS project includes the following conservation measures and/or design features that will be implemented to avoid, minimize, and offset potential adverse effects to the FTHL. These measures were developed and coordinated with the BLM, CEC, and the applicant and based on information in the project's Biological Assessment, this FEIS, and supplemental material provided during the consultation process. Conservation measures will be implemented during the project construction phase and during long-term operations and maintenance of the project. This FEIS includes additional measures to offset project impacts on rare and sensitive species; refer to Measures BIO-1 through BIO-8 and BIO-10 through BIO-20, which will be implemented to further reduce impacts to biological resources on the IVS project site.

(1) Prior to ground disturbing activities, an individual shall be designated as Designated Biologist[1] (i.e., field contact representative); the Designated Biologist shall be employed by the Applicant for the life of the project. The Designated Biologist shall have the authority to ensure compliance with these conservation measures and will be the primary agency contact dealing with these measures. The Designated Biologist shall have the authority and responsibility to halt activities that are in violation of these conservation measures. A detailed list of responsibilities for the Designated Biologist is listed in measures BIO-2 and BIO-11 of the draft SA/EIS. To avoid and minimize impacts to the FTHL, the Designated Biologist and/or biological monitor(s) shall:

- Notify BLM's Authorized Officer (i.e., BLM field manager, El Centro), the Energy Commission CPM, and the Service (i.e., Carlsbad Fish & Wildlife Office) at least 14 calendar days before initiating ground-disturbing activities.

- Immediately notify BLM's Authorized Officer, the CPM, and the Service in writing if the applicant is not in compliance with any conservation measure, including but not limited to any actual or anticipated failure to implement conservation measures within the time periods specified.

- Be present during construction (e.g., grubbing, grading, SunCatcher installation) and operations and maintenance activities that take place in FTHL habitat to avoid or minimize take of FTHL. Activities include, but are not limited to, ensuring compliance with all impact avoidance and minimization measures, monitoring for FTHLs and removing lizards from harm's way, and checking avoidance areas (e.g., ephemeral streams) to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these avoidance zones.

[1] A qualified Designated Biologist must have (1) a bachelor's degree with an emphasis in ecology, natural resource management, or related science; (2) three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society (3) previous experience with applying the terms and conditions of a biological opinion; and, (4) the appropriate permit and/or training if conducting focused or protocol surveys for listed or proposed species.

- At the end of each work day, inspect all potential wildlife pitfalls (trenches, bores and other excavations) for wildlife and then backfill. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 slope at the ends to provide wildlife escape ramps, or covered to completely prevent wildlife access.

- Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to BLM's Authorized Officer and the CPM.

- During construction, examine areas of active surface disturbance periodically—at least hourly when surface temperatures exceed 29°C (85°F)—for the presence of FTHL.

- No later than January 31 of every year the Project remains in operation, provide the CPM, BLM's Authorized Officer, the Service, CDFG, and the FTHL ICC an annual FTHL Status Report, which shall include, at a minimum: (1) a general description of the status of the project site and construction activities, including actual or projected completion dates, if known; (2) a copy of the table in the Project's biological monitoring report (see Measure BIO-7) with notes showing the current implementation status of each conservation measure; (3) an assessment of the effectiveness of each completed or partially completed measure in avoiding and minimizing project impacts; (4) completed Horned Lizard Observation Data Sheets and a Project Reporting Form from the Flat-tailed Horned Lizard Rangewide Management Strategy (FTHL ICC 2003); (5) a summary of information regarding the numbers of captured, relocated, and dead FTHLs; and (6) recommendations on how conservation measures might be changed to more effectively avoid, minimize, and offset future project impacts on the FTHL.

(2) Biological Monitor(s) shall assist the Designated Biologist in conducting surveys and in monitoring of mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities. The Biological Monitor(s) shall have experience conducting FTHL field monitoring, have sufficient education and field experience to understand FTHL biology, be able to identify FTHL scat, and be able to identify and follow FTHL tracks. The Designated Biologist shall submit the resume, at least three references,

and contact information of the proposed Biological Monitors to the BLM, CEC, CDFG, and the Service for approval.

(3) Prior to Project initiation, a Worker Environmental Awareness Program (WEAP) shall be developed and implemented, and will be available in both English and Spanish. Wallet-sized cards summarizing this information shall be provided to all construction, operation, and maintenance personnel. The education program shall include the following aspects at a minimum:

- Biology and status of the FTHL.
- Protection measures designed to reduce potential impacts to the species.
- Reporting procedures to be used if a FTHL is encountered in the field.
- Driving procedures and techniques, for commuting to, and driving on, the Project site, to reduce mortality of FTHL on roads.

(4) The Applicant will fund and implement a Before and After Impact Study to determine if FTHLs persist after construction. The study design will be reviewed and approved by the BLM, CDFG, ICC and the Service prior to ground-disturbing activities. Temporary FTHL barrier fencing shall be installed along the main construction access road, east of the Project site. FTHL barrier fencing shall be built per specifications listed in Appendix 7 of the Strategy to prevent FTHLs from entering these areas during construction. Barrier fencing shall be inspected daily by the Designated Biologist or biological monitor(s) to ensure the fence sustains its effectiveness as a lizard-proof barrier. If FTHLs are encountered within the fence, the Designated Biologist or biological monitor(s) shall remove the lizards per conservation measure #8 below. Fencing shall be removed upon completion of project construction and/or access road is no longer used as a primary road.

(5) FTHLs will be removed from harm's way during all construction activities. FTHL removal will be conducted by two or more biological monitors when construction activities are being conducted in suitable FTHL habitat. FTHL removal shall be conducted by experienced biological monitors approved by the BLM, Service, and CDFG. Removal surveys shall also include:

- Accurate records maintained by biological monitors for each relocated FTHL, including sex, snout-vent length, weight, air temperature, location, date, and time of capture and release, a close-up photo of the lizard, and a photo of the habitat where the lizard was first encountered. A sample of the lizard scat shall be collected, if possible. A Horned Lizard Observation Data Sheet and a Project Reporting Form, per Appendix 8 of the Strategy, shall be completed. This information shall be included in the annual FTHL Status Report, per conservation measure #1.

(6) During operations and maintenance, the Designated Biologist or biological monitor(s) shall evaluate and implement the best measures to reduce FTHL mortality along access and maintenance roads, particularly during the FTHL active season (March 1 through September 30). These measures may include reduced driving speeds, biological monitor escorts, or temporary fencing at designated locations. Implementation of these measures would be based on FTHL activity levels, the best professional judgment of the Designated Biologist, and site-specific road utilization. FTHL found on access/maintenance roads will be relocated based on sub-measure 7, below.

(7) The removal of FTHLs out of harm's way shall include relocation to nearby suitable habitat in low-impact (e.g., away from roads and SunCatchers) areas of the Project site. Relocated FTHLs shall be placed in the shade of a large shrub in undisturbed habitat. If surface temperatures in the sun are less that 75°F or exceed 100°F, the Designated Biologist or biological monitor, if authorized, shall hold the FTHL for later release. Initially, captured FTHLs shall be held in a cloth bag, cooler, or other appropriate clean, dry container from which the lizard cannot escape. Lizards shall be held at temperatures between 75°F and 90°F and shall not be exposed to direct sunlight. Release shall occur as soon as possible after capture and during daylight hours. The Designated Biologist or biological monitor shall be allowed some judgment and discretion when relocating lizards to maximize survival of FTHLs found in the Project area. Persons that handle FTHLs shall first obtain all necessary permits and authorization from the CDFG. If the species is listed, only persons authorized by both CDFG and the Service under the auspices of this biological opinion shall be permitted to handle FTHLs.

(8) To the maximum extent practicable, grading in FTHL habitat will be conducted during the active season, which is defined as March 1 through September 30 or if ground temperatures are between 75°F and 100°F. If grading cannot be conducted during this time, any FTHLs found shall be removed to low-impact areas (see above) where suitable burrowing habitat exists, e.g., sandy substrates and shrub cover.

(9) To compensate for loss of FTHL habitat, the Applicant shall contribute to the National Fish and Wildlife Foundation (NFWF) Account. The BLM may use the compensation funds to acquire or restore FTHL habitat within and/or contiguous to the existing FTHL Management Areas (MA) in coordination with the FTHL Interagency Coordinating Committee (ICC). Responsibilities for habitat acquisition and management of the compensation lands are delegated to BLM. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for additional in-lieu fees for habitat acquisition and management of additional compensation lands or additional funds required to compensate for any additional habitat disturbances.

(10) Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Mitigating Bird Collisions with Power Lines (APLIC 2004) to reduce the likelihood of large bird electrocutions and collisions.

(11) The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities. Spoils shall be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling shall be minimized. All disturbances, vehicles, and equipment shall be confined to the flagged areas. To the extent possible, surface disturbance shall be timed to minimize mortality to FTHL (See measure #9).

(12) Temporarily disturbed areas associated with water pipeline and transmission line construction and staging areas, shall be revegetated according to a Habitat Restoration Plan (HRP) approved by the BLM, CEC, CDFG, and Service. The HRP must be approved in writing by the above-listed agencies prior to the initiation of any vegetation disturbing activities.

Restoration involves recontouring the land, replacing the topsoil (if it was collected), planting seed and/or container stock, and maintaining (i.e., weeding, replacement planting, supplemental watering, etc.) and monitoring the restored area for a period of five years (or less if the restoration meets all success criteria). Components of the HRP shall include, at a minimum:

- The incorporation of Desert Bioregion Revegetation/Restoration Guidance measures. These measures generally include alleviating soil compaction, returning the surface to its original contour, pitting or imprinting the surface to allow small areas where seeds and rain water can be captured, planting seedlings that have acquired the necessary root mass to survive without watering, planting seedlings in the spring with herbivory cages, broadcasting locally collected seed immediately prior to the rainy season, and covering the seeds with mulch.

(13) The Applicant shall install exclusionary fencing around the evaporation ponds and cover the evaporation ponds with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and the ponds shall be designed such that the netting will never contact the water.

(14) The Applicant will use water for construction, operation, maintenance, and decommissioning (e.g., truck washing, dust suppression, SunCatcher washing, landscaping, etc.) in a manner that does not result in water ponding. During construction, the biological monitor(s) shall patrol these areas to ensure water does not puddle and attract common ravens, and other wildlife to the site, and shall make recommendations for reduced water application rates where necessary.

(15) The Applicant will prepare and implement a Raven Control Plan, approved by the BLM, CEC, CDFG, and Service, for the entire project site. The raven control plan will identify the purpose of conducting raven control and include, at a minimum, training on how to identify raven nests and how to determine whether a nest belongs to a raven or a raptor species; describe the seasonal limitations on disturbing nesting raptors; describe raven control

methods to be employed (e.g. perching and nesting deterrents); and describe procedures for documenting the activities on an annual basis.

(16) The Applicant shall implement a Noxious Weed Management Plan that shall be subject to review and approval by the BLM, Service, CDFG, and the Energy Commission staff. In addition to describing weed eradication and control methods, and a reporting plan for weed management during and after construction, the final Noxious Weed Management Plan shall include at a minimum:

- A pre-construction weed inventory that includes a survey of the entire project site, for weed populations that: (1) are considered by the Imperial County Agriculture Commissioner as being a priority for control and (2) aid and promote the spread of wildfires (such as cheatgrass [*Bromus tectorum*], Saharan mustard [*Brassica tournefortii*] and medusa head [*Taeniatherum caput-medusae*]). These populations will be mapped and described according to density and area covered. These plant species will be treated prior to construction or at a time when treatments will be most effective based on phenology according to control methods and practices for invasive weed populations designed in consultation with the Imperial County Agriculture Commissioner's Office and the California Invasive Plant Council (Cal-IPC), as appropriate.

- For areas directly impacted by the Project, a pre-construction weed inventory will be conducted for those weed populations rated 'High' or 'Moderate' for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006). These weed species will be treated prior to construction or at a time when treatments will be most effective based on phenology according to control methods and practices for invasive weed populations designed in consultation with Cal- IPC.

- Weed control treatments will include all legally permitted chemical, manual, and mechanical methods applied with the authorization of the Imperial County Agriculture Commissioner. The application of herbicides will be in compliance with all State and Federal laws and regulations under the prescription of a Pest Control Advisor (PCA) and implemented by a Licensed Qualified Applicator. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the Imperial County Agriculture Commissioner. The timing of the

weed control treatment will be determined for each plant species in consultation with the PCA, the Imperial County Agriculture Commissioner, and Cal-IPC with the goal of controlling populations before they start producing seeds.

- Debris (glass, metal, etc.) associated with SunCatcher fields shall not be allowed to accumulate under SunCatchers. Any debris found, will be immediately removed and appropriately disposed or recycled.

- For the lifespan of the project (i.e., as long as the project is physically present), long term measures to control the introduction and spread of noxious weeds in the project area will be taken as follows:

    - The survey areas described above would be surveyed annually to monitor previously-identified and treated populations and to identify new invasive weed populations. The treatment of weeds will occur on a minimum annual basis, unless otherwise approved by the PCA, the Imperial County Agriculture Commissioner, and Cal-IPC.

    - During project construction, all seeds and straw materials will be certified weed free, and all gravel and fill material will be certified weed free by the Imperial County Agriculture Commissioner's Office.

    - During project construction, vehicles and all equipment will be washed (including wheels, undercarriages, and bumpers) at an off-site washing facility (e.g., a car wash or truck wash) immediately before project construction begins and prior to returning to project construction should equipment be used in a different construction area. In addition, tools such as chainsaws, hand clippers, pruners, etc. will be washed at an off-site washing facility immediately before project construction begins and prior to returning to project construction should tools be used in a different construction area. Vehicles, tools, and equipment will be washed at an off-site washing facility should these vehicles, tools, and equipment have been used in an area where invasive plants have been mapped during the pre-construction weed control inventory and as directed by the Designated Biologist, prior to entering a project area free of populations of invasive plants (as determined by the pre-construction weed control inventory). All washing will take place where rinse water is collected and disposed of in either a sanitary

sewer or landfill; an effort will be made to use wash facilities that use recycled water. A written daily log will be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log will include the signature of a responsible staff member. Logs will be available to the CEC, BLM, CDFG, the Service, and Designated Biologist for inspection at any time.

Verification: The verification methodology will be established in cooperation with the agencies on issuance of the Authorization to Proceed, if approved. At a minimum, a report shall be prepared by the Designated Biologist monthly describing how the mitigation measures described above have been satisfied thus far in the project's schedule of activities. The report shall include the FTHL relocation information, description of capture and release locations of any FTHL encountered, and other relevant information needed to demonstrate compliance with the measures described above.

BIO-10 To fully mitigate for habitat loss and potential take of FTHL, in lieu of the project owner acquiring compensation lands, shall deposit into the NFWF renewable energy accounts a monetary equivalent for 6,619.9 acres of land suitable for these species, at a cost of no less than $5,717,028.34 (see Table 4-27 for the breakdown of costs) to replace the affected acreage. These compensation funds will be used to acquire, protect, or restore FTHL habitat within and contiguous with the FTHL Management Areas (MA) in coordination with the FTHL Interagency Coordinating Committee (ICC). Responsibilities for habitat acquisition and management of the compensation lands are delegated to BLM. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for additional in-lieu fees for habitat acquisition and management of additional compensation lands or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the fair market value of compensation lands at the time of construction to acquire habitat. The acquisition and management of compensation lands shall include the following elements:

Selection Criteria for Compensation Lands. The compensation lands selected for acquisition should:

- Be within in holdings of the nearest Management Area (MA);
- Be in the Colorado Desert;

- Provide moderate to good quality habitat for FTHL with capacity to regenerate naturally when disturbances are removed, though poor quality habitat is acceptable near protected FTHL habitats;

- Be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected by a public resource agency or a non-governmental organization dedicated to habitat preservation; and

- Be connected to lands currently occupied by FTHL, ideally with populations that are stable, recovering, or likely to recover;

Other approved uses of the compensation funds should acquisition opportunities be exhausted:

- Transfer funds to other MAs to purchase FTHL habitat, especially habitat within or contiguous with MAs that are threatened with imminent impacts;

- Construct and maintain fences and signs around MAs to prevent off-highway vehicles (OHV) from entering and degrading FTHL habitat. In addition, these fences could be designed to physically prevent FTHLs from leaving the MAs and encountering nearby roads; and

- Restore degraded FTHL habitat within or contiguous with MAs.

Prior to ground-disturbing project activities, the project owner would provide compensation funds for impacts to FTHL habitat in the amount of no less than $5,717,028.34 to BLM. Proof of payment must be submitted to the CPM and BLM's Authorized Officer prior to commencement of project disturbance. These compensation amounts were calculated as follows (see Table 4-27 for a calculation of costs):

- Land acquisition costs for compensation lands, calculated at no less than $500/acre for 6,619.9 acres: $3,309,950.00 minimum;

- Pre-acquisition Liability Survey (PALS) at no less than $2,500/parcel (approximately 40 acres/parcel): $413,743.75 minimum;

- Appraisal at no less than $3,000/parcel: $458,908.50 minimum;

- Costs of enhancing and restoring FTHL compensation lands and minor cleanups calculated at no less than $25/acre for 6,589 acres: $165,497.50 minimum;

- BLM direct costs for realty staff and operations, calculated at no less than 15%: $458,908.50 minimum; and

- BLM Denver Business Center, (standard BLM-wide charge to cover costs to implement project that cannot be directly tracked) calculated at no less than 17.1%: $834,852.14 minimum.

Verification: The project owner must provide proof of FTHL habitat compensation payment at least 30 days prior to ground disturbing project activities to BLM's Authorized Officer and the CPM.

Within 90 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM verification that disturbance to Sonoran creosote scrub habitat did not exceed 6,619.9 acres, and that construction activities at the plant site and along the transmission line and reclaimed water pipeline alignment did not result in impacts to Sonoran creosote scrub habitat adjacent to work areas. If habitat disturbance exceeded that described in this analysis, the CPM and BLM's Authorized Officer would notify the project owner of any additional funds required to compensate for any additional habitat disturbances at the adjusted market value at the time of construction to acquire and manage habitat. Payment for any additional funds must be made within 30 days of notification by the CMP and BLM's Authorized Officer.

BIO-11 The project owner shall provide Energy Commission staff, BLM, CDFG, USFWS, and Corps representatives with reasonable access to the project site and mitigation lands under the control of the project owner and shall otherwise fully cooperate with the Energy Commission staff, CDFG, USFWS, Corps, and BLM's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth in the conditions of certification. The project owner shall hold the Designated Biologist, the Energy Commission staff, CDFG, USFWS, Corps, and BLM harmless for any costs the project owner incurs in complying with the management measures, including stop work orders issued by the BLM's Authorized Officer, or the Designated Biologist. The Designated Biologist shall do all of the following:

- Notify BLM's Authorized Officer and the CPM at least 14 calendar days before initiating ground-disturbing activities.

- Immediately notify BLM's Authorized Officer and the CPM in writing if the project owner is not in compliance with any conditions of certification, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the conditions of certification.

- Remain on site daily along with the Biological Monitoring team members while grubbing and grading are taking place to avoid or minimize take of special-status species and to check for compliance with all impact avoidance and minimization measures.

- Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed for each phase and submit a monthly compliance report to BLM's Authorized Officer and the CPM.

- No later than January 31 of every year the IVS project facility remains in operation, provide the CPM, BLM's Authorized Officer, USFWS, CDFG, and the FTHL ICC an annual FTHL Status Report, which shall include, at a minimum: (1) a general description of the status of the project site and construction activities, including actual or projected completion dates, if known; (2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; (3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts; (4) completed Horned Lizard Observation Data Sheet Sheets and a Project Reporting Form from the *Flat-tailed Horned Lizard Rangewide Management Strategy* (FTHL ICC 2003); (5) a summary of information regarding information from the Biological Monitors on the FTHL, and other wildlife, on the site; and (6) other relevant information associated with the IVS project.

- Ensure that all observations of FTHL and their sign during construction project activities are reported to the Designated Biologist for inclusion in the next monthly compliance report submitted to BLM's Authorized Officer and the CPM.

- No later than 45 days after the initial production of energy in the project's equipment, provide BLM's Authorized Officer and the CPM a FTHL Mitigation

Report that shall include, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of FTHLs; 3) information about other project impacts on the FTHL; 4) construction dates; 5) an assessment of the effectiveness of conditions of certification in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the FTHL; and 7) any other pertinent information, including the level of take of the FTHL associated with the project.

Verification: Every month, the project owner shall deliver to BLM's Authorized Officer, the CPM, CDFG, Corps, and USFWS via FAX or electronic communication a written report from the Designated Biologist describing all reported incidents of a sighting, injury, kill, or relocation of a listed species, identifying who was notified, and explaining when the incidents occurred. In the case of a sighting in an active construction area, the project owner shall, at the same time, submit a map (e.g., using Geographic Information Systems) depicting both the limits of construction and sighting location to BLM's Authorized Officer, the CPM, CDFG, Corps, and USFWS.

BIO-12 The project owner shall implement a Raven Monitoring, Management, and Control Plan that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of the USFWS, CDFG, and BLM, and Energy Commission staff. The draft Raven Monitoring, Management, and Control Plan submitted by the applicant (SES 2009f) shall provide the basis for the final plan, subject to review and revisions from the BLM, USFWS, and CDFG, and the Energy Commission staff.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the BLM's Authorized Officer, the CPM, USFWS, and CDFG with the final version of the Raven Monitoring, Management, and Control Plan that has been reviewed and approved by USFWS, CDFG, and BLM's Authorized Officer . The BLM would determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Raven Monitoring, Management, and Control Plan must be made only after consultation with the BLM, Energy Commission staff, USFWS, and CDFG. The project owner shall notify BLM's Authorized Officer and the CPM no less than five working days before implementing any BLM- and CPM-approved modifications to the Raven Monitoring, Management, and Control Plan.

Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM for review and approval, a written report identifying which items of the Raven Monitoring, Management, and Control 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.

BIO-13 The project owner shall install exclusionary fencing around the evaporation ponds and cover the evaporation ponds prior to any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and the pond shall be designed such that the netting will never contact the water. Monitoring of the evaporation ponds shall include the following:

- The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, and to determine if the nets pose an entrapment hazard to birds and wildlife. Surveys shall be of sufficient duration and intensity to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the IVS project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologist shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the BLM's Authorized Officer, CPM, CDFG, and USFWS.

- If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the BLM's Authorized Officer, CPM, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action

that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.

- If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits.

- If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, the site visits can be reduced to two surveys per years, during spring and fall migration.

Verification: No less than 30 days prior to operation of the evaporation ponds the project owner shall provide to the BLM's and CPM's Authorized Officer as-built drawings and photographs of the ponds indicating that the bird exclusion netting has been installed. The Designated Biologist shall submit annual monitoring reports to the BLM's Authorized Officer, CPM, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. The annual reports shall fully describe any bird or wildlife death or entanglements detected during the site visits or at any other time, and shall describe actions taken to remedy these problems. The report shall be submitted to the BLM's Authorized Officer, CPM, CDFG, and USFWS no later than January 31st of every year for the life of the project.

BIO-14 Where practicable, ground-disturbing activities would be conducted outside the bird nesting season (February 1 through July 31). Pre-construction nest surveys shall be conducted if construction activities would occur from February 1 through July 31. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

- Surveys shall cover all potential nesting habitat in the project site and within 500 feet of the boundaries of the plant site and linear facilities;

- At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;

- If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG, USFWS, and BLM) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a weekly report stating the survey results, to BLM's Authorized Officer and the CPM; and

- The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.

Verification: At least 10 days prior to the start of any project-related ground disturbance activities or construction equipment staging, the project owner shall provide BLM's Authorized Officer and the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest. Additional copies shall be provided to CDFG and USFWS.

BIO-15 To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the FTHL relocation efforts. Surveys for badgers and kit fox shall be conducted as described below:

- Biological Monitors shall perform pre-construction surveys for badger and kit fox dens for any areas subject to disturbance from construction no less than 30 days prior to the start of initial ground disturbance activities, including areas within 250 feet of all project facilities, utility corridors, and access roads. If dens are detected each den would be classified as inactive, potentially active, or definitely active.

- Inactive dens that would be directly affected by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox. Potentially and definitely active dens would be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If not tracks are observed in the tracking medium or no photos are

taken of the target species after three nights, the den would be excavated and backfilled by hand. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox 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 fox are trapped in the den.

Verification: The project owner shall submit a report to BLM's Authorized Officer, the CPM and CDFG at least 30 days prior to the start of any project-related site disturbance activities that describes when badger and kit fox surveys were completed, field observations, implemented mitigation measures, and the results of the mitigation.

BIO-16 The project owner shall implement the following measures to avoid and offset impacts to burrowing owls:

- Complete a pre-construction survey for burrowing owls for any areas subject to disturbance from construction no less than 30 days prior to the start of initial ground disturbance activities. If burrowing owls are present within 500 feet of the project site or linear facilities, then the CDFG burrowing owl guidelines (CDFG 1995) shall be implemented.

- Monitor burrowing owl pairs within 500 feet of any activities that exceed ambient noise and/or vibration levels.

- Establish a 500-foot set back from any active burrow and construct additional noise/visual barriers (e.g., haystacks or plywood fencing) to shield the active burrow from construction activities. Post signs (in both English and Spanish) designating presence of sensitive area.

- Passively relocate all owls occupying burrows that would be temporarily or permanently affected by the project and implement the following CDFG take avoidance measures:

    - Occupied burrows shall not be disturbed during the nesting season (February 1–August 31) unless a qualified biologist can verify through non-invasive methods that egg laying/incubation has not begun or juveniles are foraging independently and able to fly;

- A qualified biologist must relocate owls, confirm that owls have left burrows prior to ground-disturbing activities, and monitor the burrows. Once evacuation is confirmed, the biologist should hand excavate burrows and then fill burrows to prevent reoccupation; and

- Relocation of owls shall be approved by and conducted in consultation with CDFG and BLM's Authorized Officer.

- Submit a Burrowing Owl Mitigation and Monitoring Plan to BLM's Authorized Officer, the CPM, and CDFG for review and approval prior to relocation of owls (and incorporate it into the project's BRMIMP) as well as a construction termination report with results to CDFG, BLM's Authorized Officer, and the CPM 30 days after completing owl relocation and monitoring and at least 30 days prior to the start of commercial operation.

Verification: The project owner shall submit a report to CDFG, USFWS, and BLM's Authorized Officer, and the CMP at least 30 days prior to the start of any project-related site disturbance activities that describes when surveys were completed, observations, mitigation measures, and the results of the mitigation. If burrowing owls are to be protected on site or relocated, the project owner shall coordinate with and report to CDFG, USFWS, BLM, and Energy Commission staff on these proposed activities in a Burrowing Owl Monitoring and Mitigation Plan. Within 30 days after completion of owl relocation and monitoring, and the start of ground disturbance or at least 90 days prior to the sale of power, the project owner shall provide to the CDFG, BLM's Authorized Officer, and CPM a written construction termination report identifying how measures have been completed.

BIO-17 **CDFG Jurisdictional Streambeds and Corps Jurisdictional Waters of the U.S.** The project owner would compensate for impacts to CDFG jurisdictional streambeds and to Corps jurisdictional waters of the U.S.

- **Acquire Off-Site Desert Ephemeral Streams:** For the purposes of the CDFG Lake and Streambed Agreement requirements, compensation land purchased in Sonoran creosote scrub habitat would include ephemeral streams with at least 312 acres of CDFG jurisdictional streambeds, mitigated at a 1:1 ratio. The terms and conditions of this acquisition or easement of the desert ephemeral streams mitigation lands shall meet the following criteria: (1) include at least 312 acres of CDFG jurisdictional streambeds; (2) be characterized by similar soil permeability, hydrological and biological

functions as the affected ephemeral streams; and (3) located in the Colorado Desert. The compensation lands shall have equal or greater acreage than the CDFG jurisdictional streambeds affected by the IVS project. The acquisition of CDFG jurisdictional streambeds can be included with the FTHL mitigation lands for only one year under the FTHL mitigation requirements. After one year, the acquisition of any remaining ephemeral stream acreage (up to a total of at least 312 acres), would be acquired or mitigated by enhancement, rehabilitation, or re-establishment of ephemeral streams independent of the FTHL mitigation. Acquired mitigation lands shall be approved by the BLM and CPM in consultation with CDFG.

- **Security for Implementation of Mitigation:** A security in the form of an irrevocable letter of credit, pledged savings account, or certificate of deposit for the amount of all mitigation measures pursuant to this condition of certification shall be submitted to, and approved by the CPM, in consultation with CDFG, prior to commencing project activities within areas of CDFG jurisdiction. This amount shall be based on a cost estimate produced by a PAR or PAR-like process, which shall be submitted to CDFG for review and to the CPM for approval within 60 days prior to commencing project activities within areas of CDFG jurisdiction. The security shall be approved by the CDFG's legal advisors, prior to its execution, and shall allow the CDFG at its discretion to recover funds immediately if the CPM, in consultation with CDFG determines there has been a default.

- **Preparation of a Management Plan:** The project owner shall submit to the CMP and CDFG, a draft Management Plan that reflects site-specific enhancement measures for the ephemeral streams on the acquired compensation lands. The objective of the Management Plan shall be to enhance the wildlife value of the ephemeral streams and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control. No later than 12 months after publication of the Energy Commission Decision the project owner shall submit a final Management Plan for review and approval to the CDFG.

- **Right of Access and Review for Compliance Monitoring:** The CDFG and CMP reserve the right to enter the project site at any time to ensure compliance with these conditions. The project owner herein grants to the CPM and CDFG employees and/or their representatives the right to enter the project site at any time, to ensure compliance with the terms and conditions and/or to

determine the impacts of storm events, maintenance activities, or other actions that might affect the restoration and revegetation efforts. The CPM and CDFG may, at their discretion, review relevant documents maintained by the operator, interview the operator's employees and agents, inspect the work site, and take other actions to assess compliance with or effectiveness of mitigation measures.

- **Notification:** The project owner shall notify the CPM and CDFG in writing, at least five days prior to initiation of project activities in CDFG jurisdictional areas as noted and at least five days prior to completion of project activities in CDFG jurisdictional areas. The project owner shall notify the CPM and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of a proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM and CDFG no later than seven days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports.

    - **Biological Conditions:** a change in biological conditions includes, but is not limited to, the following: (1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or (2) the presence of biological resources within or adjacent to the project area, whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

    - **Physical Conditions:** a change in physical conditions includes, but is not limited to, the following: (1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; (2) the movement of a river or stream channel to a different location; (3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or (4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.

- **Legal Conditions:** a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California.

- **Code of Regulations:** The project owner shall provide a copy of the Lake Streambed Impact Minimization and Compensation Measures to all contractors, subcontractors, and the Applicant's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or personnel from another agency upon demand. The CDFG reserves the right to issue a stop work order after giving notice to the project owner , if the CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:

  - The information provided by the applicant regarding streambed alteration is incomplete or inaccurate;

  - New information becomes available that was not known to it in preparing the terms and conditions;

  - The project or project activities as described in the Final Environmental Impact Statement (FEIS) have changed; or

  - The conditions affecting biological resources changed or the BLM's Authorized Officer, in consultation with CDFG or Corps, determines that project activities would result in a substantial adverse effect on the environment.

- **Best Management Practices:** The applicant shall also comply with the following conditions:

  - The owner shall minimize road building, construction activities, and vegetation clearing within ephemeral streams to the extent feasible.

  - The project owner shall not allow water containing mud, silt or other pollutants from grading, aggregate washing, or other activities to enter a lake or flowing stream or be placed in locations that may be subjected to high storm flows.

- The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the operator to ensure compliance.

- Spoil sites shall not be located within ephemeral streams or locations that may be subjected to high storm flows, where spoil shall be washed back into an ephemeral stream or lake.

- Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to vegetation or wildlife resources, resulting from project-related activities shall be prevented from contaminating the soil and/or entering waters of the State. These materials, placed within or where they may enter an ephemeral stream or lake, by project owner or any party working under contract or with the permission of the project owner shall be removed immediately.

- No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State.

- When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any ephemeral stream.

- No equipment maintenance shall be done within 150 feet of any ephemeral streams where petroleum products or other pollutants from the equipment may enter these areas under any flow.

- The project owner must have a Frac-Out Contingency Plan approved by CDFG and the CPM prior to commencement of construction of the reclaimed water pipeline for horizontal directional drilling under the waterways.

Any other requirements stated in the Lake and Streambed Agreement not listed above would be adhered to by the project owner. Should project conditions change and impacts to bed, bank, or channel occur on any of the water ways along the reclaimed water pipeline route, a revised Lake and Streambed

Application must be submitted to CDFG prior to construction. At that time, impacts will be assessed and an appropriate mitigation shall be determined.

Corps Jurisdictional Waters of the U.S.: Originally, the Corps indicated that, depending on the impacts and proposed mitigation type, the minimum mitigation required would be 2:1 ratio for unavoidable impacts, with up to half (1:1 ratio) of the mitigation dedicated to preservation and the other half to enhancement or restoration within the Salton Sea watershed. At this time, the Corps is directing the mitigation planning effort to enhance Carrizo Creek. This creek is west/northwest of the IVS project site in Anza Borrego State Park. Carrizo Creek was chosen by the Corps in coordination with CSP because of its proximity to the IVS project site, its current protected status as a State Park, and because its within known PBS populations. The IVS project site is in the HUC 8 Salton Sea Watershed with ephemeral streams that are tributary to either Coyote Wash or the Westside Main Canal prior to flowing into the Salton Sea. Carrizo Creek is in the HUC 8 Carrizo Creek watershed directly to the north, draining into San Felipe Creek and then to the Salton Sea.

In coordination with the Corps and CSP, the applicant is required to prepare a draft enhancement plan that will cover approximately 25 linear mi of Carrizo Creek from its headwaters downstream through Carrizo Marsh. In development of the enhancement plan, the applicant is required use the California Rapid Assessment Method (CRAM) to assess the existing and potential post-enhancement conditions of Carrizo Creek, update the course scale tamarisk (*Tamarix* spp.) infestation mapping provided by CSP, and prepare the plan in accordance with the Corps and EPA Final Mitigation Rule (33 CFR Parts 325 and 332 [40 CFR Part 230]). The enhancement plan must at a minimum include methods for the initial removal of tamarisk and other noxious weeds, retreatment methods, limited native replanting of honey and screw bean mesquite trees (*Prosopis glandulosa* and *P. pubescens*, respectively) and arrow weed (*Pluchea sericea*), monitoring and reporting protocols, performance standards, adaptive management strategy, and a mechanism for long-term management. The Corps is unlikely to require the applicant to enhance the entire 25 mi reach of Carrizo Creek and Carrizo Marsh to mitigate project related on-site direct and indirect impacts. The Corps mitigation requirement will likely be on the order of a 3:1 to 5:1 ratio depending on the enhancement plan and benefits to the functions and services of Carrizo Creek relative to the impacts on-site. It is the Corps expectation that the applicant will initiate the first phase of the enhancement effort equal to their final mitigation requirements and that the remainder will be

incorporated into an in-lieu fee program or implemented by the CSP through grant funding. The Corps, CDFG, and USFWS mitigation area may overlap for waters of the U.S., streambeds, and PBS. The project owner would follow mitigation requirements stated in the Clean Water Act 404 permit issued by the Corps.

Verification: No less than 90 days prior to acquisition of the parcel(s) containing no less than 312 acres of CDFG jurisdictional streambeds, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.

Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to CDFG for review and approval prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written verification to the CDFG and CPM that the compensation lands have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground-disturbing activities, the project owner shall provide Security in accordance with this condition. Within 90 days after the land purchase, as determined by the date on the title, the project owner shall provide the CDFG and CPM with a management plan for review and approval for the compensation lands and associated funds.

No fewer than 30 days prior to the start of work potentially affecting CDFG jurisdictional streambeds, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above best management practices will be implemented and provide a discussion of work in CDFG jurisdictional streambeds Compliance Reports for the duration of the project.

This proposed condition of certification will need to be altered as precise details of the required mitigation for impacts to waters of the U.S. and CDFG jurisdictional streambeds along the proposed reclaimed water line and to waters of the U.S. on the proposed project site are not yet determined. When recommendations for a Lake and Streambed Alteration Permit and the Federal Clean Water Act Section 404(b)(1) Alternatives Analysis are completed, Mitigation Measure BIO-17 will be updated to reflect the mitigation requirements by the Corps and CDFG.

BIO-18 The project owner shall implement a Noxious Weed Management Plan that meets the approval of the BLM. The draft Noxious Weed Management Plan submitted by the applicant (SES 2009e) shall provide the basis for the final plan, subject to review and revisions from BLM, USFWS, Corps, and CDFG. In addition to describing weed eradication and control methods, and a reporting plan for weed management during and after construction and operation, the final Noxious Weed Management Plan shall include at least the following Best Management Practices to prevent the spread and propagation of noxious weeds:

- Limit the size of any vegetation and/or ground disturbance to the absolute minimum, and limit ingress and egress to defined routes.
- Maintain vehicle wash and inspection stations and closely monitor the types of materials brought onto the site.
- Reestablish vegetation quickly on disturbed sites with native seed mixes.
- Monitoring and rapid implementation of control measures to ensure early detection and eradication for weed invasions.
- Use only weed-free straw or hay bales used for sediment barrier installations, and weed-free seed.
- Reclamation and revegetation shall occur on all temporarily disturbed areas, including pipelines, transmission lines, and staging areas.
- Control weeds in areas where irrigation and mirror washing take place.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the BLM's Authorized Officer and the CPM with the final version of the Noxious Weed Management Plan that has been reviewed and approved by BLM, USFWS, and CDFG. BLM's Authorized Officer and the CPM would determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Noxious Weed Management Plan shall be made only after consultation BLM, USFWS, and CDFG. The project owner shall notify the BLM's Authorized Officer no less than five working days before implementing any BLM - and CPM-approved modifications to the Noxious Weed Management Plan.

Within 30 days after completion of project construction, the project owner shall provide to the BLM's Authorized Officer and the CPM for review and approval, a

written report identifying which items of the Noxious Weed Management 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. A summary report on noxious weed management on the project site shall be submitted in the Annual Compliance Report during plant operations.

BIO-19 To avoid impacts to State and Federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate or California Native Plant Society List 1A, 1B, 2, 3, or 4 plants that might occur on the IVS project site or along the proposed transmission line and proposed reclaimed water pipeline alignments, pre-construction surveys shall be conducted in these areas in spring and fall 2010. If special-status plant species are detected within 100 feet of the project footprint, a qualified botanist shall prepare a Sensitive Plant Protection Plan to be implemented to avoid direct and indirect impacts. The project owner shall implement the following measures:

- **Pre-Construction Floristic Surveys:** A qualified botanist shall conduct floristic surveys on the IVS project site and along linear facilities in all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. Surveys shall be conducted within 100 feet of all surface-disturbing activities at the appropriate time of year and according to guidelines from the BLM (2009), California Department of Fish and Game (CDFG 2009b) and the California Native Plant Society (CNPS 2001).

- **Special-Status Plant Protection Plan:** If special-status plant species are detected during pre-construction surveys, a qualified botanist shall prepare a Sensitive Plant Protection Plan (Plan). Populations of rare plants shall be flagged and mapped prior to any ground disturbance. Where possible the owner shall modify the placement of structures, access roads, laydown areas, and other ground-disturbing activities in order to avoid the plants. The Plan shall include measures for avoiding direct impacts and accidental impacts during construction by identifying the plant occurrence location and establishing an appropriately sized buffer. The Plan shall also include measures to avoid indirect impacts including: sedimentation from adjacent disturbed soils; alterations of the site hydrology from changes in the ephemeral stream patterns; dust deposition; and displacement or degradation of the habitat from the introduction and spread of noxious weeds. The Plan

shall also include a discussion of monitoring and reporting requirements during and after construction.

- Prior to any ground disturbance, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance including human trampling, erosion, and dust. The size of the buffer would depend upon the proposed use of the immediately adjacent lands, and includes consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by the Designated Biologist. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, BLM, and CPM.

- Impacts to non-listed plant species (i.e., CNPS List 1, 2, 3, and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseeding (with locally collected seed stock), or other BLM-approved methods. If project activities would result in loss of any of the known individuals within an existing population of non-listed special-status plant species, the project owner shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio. The BLM may reduce this ratio depending on the sensitivity of the plant. The preserved habitat shall be occupied by the plant species affected, and be of superior or similar habitat quality to the affected areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist.

- **State or Federally Listed Plant Species:** If impacts to listed plants are determined to be unavoidable, the USFWS shall be consulted for authorization, through the context of a Biological Opinion, and/or the CDFG shall be consulted for authorization through an Incidental Take Permit. Additional mitigation measures to protect or restore listed plant species or their habitat may be required by the USFWS and/or CDFG before impacts are authorized.

- **Agency Notification and Avoidance:** If State or Federally listed plant species are detected during the pre-construction floristic surveys, BLM's

Authorized Officer, the CPM, USFWS, and CDFG shall be notified in writing no more than 15 days from detection of the plants.

- **Review and Submittal of Plan:** The project owner shall submit to the USFWS, BLM's Authorized Officer, and CDFG a draft Sensitive Plant Protection Plan. Prior to any ground-disturbing activities within 100 feet of the sensitive plant occurrences detected during the pre-construction floristic surveys, the project owner shall submit to BLM's Authorized Officer and the CPM a final Plan that reflects review and approval by BLM in consultation with CDFG and USFWS.

Verification: The project owner shall submit two reports: (1) no later than July 31, 2010 describing the results of the spring floristic surveys and, (2) October 31, 2010 describing the results of the fall floristic surveys conducted on the IVS project power plant site and along the proposed transmission line and reclaimed water pipeline alignments. The report shall be submitted to BLM's Authorized Officer, the CPM, USFWS, and CDFG and shall describe qualifications of the surveyor, survey methods, dates and times, a discussion of visits to reference sites, figures depicting the area(s) surveyed, figures depicting the locations of any special-status plants observed, and a list of all plant species detected.

If special-status plant species were detected during the 2010 surveys the project owner shall submit to BLM's Authorized Officer, the CPM, USFWS, and CDFG a Sensitive Plant Protection Plan (Plan) at least 60 days prior to the start of any ground-disturbing activities. The BLM's Authorized Officer and the CPM would determine the Plan's acceptability in consultation with BLM , CDFG, and USFWS within 15 days of receipt of the Plan. Any modifications to the approved Plan shall be made only after approval by BLM in consultation with CDFG and USFWS. The project owner shall notify BLM's Authorized Officer and the CPM no fewer than five working days before implementing any BLM - and CPM-approved modifications to the Plan.

Within 30 days after completion of construction, the project owner shall provide to BLM's Authorized Officer, the CPM, USFWS, and CDFG a construction termination report discussing how mitigation measures described in the Plan were implemented.

BIO-20 Upon project closure the project owner shall implement a final Decommissioning and Reclamation Plan to remove all structures from the project site and fill from waters of the U.S. and restore the natural topography, hydrology and

vegetation/wildlife habitat. The Decommissioning and Reclamation Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities, and shall be consistent with the guidelines in BLM's 43 CFR 3809.550 et seq., subject to review and revisions from BLM's Authorized Officer and the CPM in consultation with USFWS, Corps, and CDFG.

Verification: No less than 30 days from publication of the Energy Commission Decision or the Record of Decision, whichever comes first, the project owner shall provide to BLM's Authorized Officer and the CPM a draft Decommissioning and Reclamation Plan. No more than 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide BLM's Authorized Officer and the CPM with the final version of a Decommissioning and Reclamation Plan that has been reviewed and approved by BLM's Authorized Officer and the CPM, in consolation with USFWS, and CDFG. All modifications to the approved Channel Decommissioning Plan shall be made only after approval from BLM's Authorized Officer and the CPM, in consultation with USFWS, Corps, and CDFG.

No more that 60 days prior to initiating project-related ground disturbance activities the project owner shall provide financial assurances to BLM's Authorized Officer and the CPM to guarantee that an adequate level of funding will be available to implement measures described in the Decommissioning and Reclamation Plan.

4.3.7 Summary of Impacts

Table 4-28 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to biological resources.

As shown in Table 4-28, even with implementation of Measures BIO-1 through BIO-20, the IVS project and the other Build Alternatives will result in unavoidable adverse impacts to the FTHL and may affect PBS forage habitat availability. The implementation of Measures BIO-1 through BIO-20 is anticipated to reduce the severity of impacts to other biological resources to the point that those impacts are not considered adverse.

Table 4-28 Summary of Biological Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	• Permanent loss of vegetation communities • Permanent loss of waters of the U.S. and CDFG jurisdictional streambeds • Potential loss of some special-status plant species • Affects on raptors, migratory, and special-status bird species • Take of burrowing mammals • Potential effects on Peninsular bighorn sheep • Take of FTHL • Potential harm to birds from total dissolved solids in evaporation ponds • Attraction to ponds will increase risk of avian collisions with transmission towers • Introduction of noxious weed seed to the project site	• Minimization of vegetation community removal • Funding to BLM for acquisition of 6,619.9 acres of equivalent lands to offset impacts to vegetation communities and suitable for FTHL • Acquisition and preservation of lands with nonwetland waters of the U.S. to be preserved at 1:1 (preservation: impacts) and enhancement, restoration, creation of nonwetland Waters of the U.S. at 2:1(enhancement/restoration/creation: impacts). CDFG will require acquisition and preservation at 1:1 for impacts to CDFG jurisdictional streambeds. • If special-status plant species can not be avoided during construction, required mitigation will be replacement at 2:1 • Avoidance of impacts to vegetation communities to the greatest extent feasible, measures to protect nesting birds, measures to reduce/eliminate risk of bird electrocution, and passive relocation for western burrowing owls. • Passive relocation of American badger and desert kit fox. • Fencing of project site to exclude	Unavoidable adverse impacts to the FTHL individually and on a cumulative basis. No other unavoidable adverse impacts.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		Peninsular bighorn sheep • Exclusionary netting/mesh on evaporation ponds will eliminate risk of bird mortality from ingesting toxic/hypersaline waters • Evaporation ponds located away from transmission towers • Noxious weed management measures during construction **Construction Measures** *BIO-1:* Designated biologist *BIO-2:* Construction monitoring *BIO-3:* FTHL special biologist *BIO-4:* Construction monitors *BIO-5:* Construction measure compliance *BIO-6:* Biological monitoring, construction crew training and compliance *BIO-8:* Biological Mitigation Plan implementation and monitoring *BIO-9:* FTHL Management Strategy *BIO-14:* Bird nesting period avoidance and surveys *BIO15:* American badgers and desert kit fox, pre-construction surveys and avoidance *BIO-16:* Burrowing owl pre-construction surveys and avoidance *BIO-19:* State and Federally listed species pre-	

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		construction surveys and mitigation strategy **Operations Measures** *BIO-7:* Biological Resources Mitigation Plan *BIO-8:* Biological Mitigation Plan implementation and monitoring *BIO-10:* FTHL habitat loss compensation *BIO-11:* Regulatory agency personnel site access for compliance monitoring *BIO-12:* Raven Monitoring and Control Plan *BIO-13:* Evaporation pond wildlife exclusionary measures *BIO-17:* Jurisdictional wetlands compensation *BIO-18:* Noxious Weed Management Plan *BIO-20:* Decommissioning and Reclamation Plan	
709 MW Alternative: Agency Preferred Alternative	Slightly fewer impacts than the IVS project because slightly fewer acres on the site would be affected.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same or similar impacts as the IVS project and the Agency Preferred Alternative because the site could be developed in a solar use.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; CDFG = California Department of Fish and Game; FTHL = flat-tailed horned lizard; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way; U.S. = United States.

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4.4 Climate Change

On April 2, 2007, the United States Supreme Court found that greenhouse gases (GHGs) are pollutants that must be covered by the Federal Clean Air Act (CAA). In response, on September 30, 2009, the United States Environmental Protection Agency (EPA) proposed to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose carbon dioxide (CO_2)-equivalent emissions exceed 25,000 tons per year. The Council on Environmental Quality (CEQ) published draft guidance on February 18, 2010 for Federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for Federal actions under the National Environmental Policy Act (NEPA). The following analysis presents information on GHG emissions related to electricity generation, evaluates potential emissions from the Imperial Valley Solar (IVS) project, and describes the applicable GHG standards and requirements.

4.4.1 Methodology

The analysis of GHGs is a much different analysis than the analysis of criteria pollutants for several reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or nonattainment is based on daily exceedances of applicable ambient air quality standards (AAQS). Further, several ambient AAQS are based on relatively short-term exposure effects on human health (e.g., 1-hour and 8-hour). Because the half-life of CO_2 is approximately 100 years, for example, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame. As a result, GHG effects are evaluated over a longer time frame than a single day.

The CEQ proposes that agencies should consider the direct and indirect GHG emissions from the action in scoping and, to the extent that scoping indicates that GHG emissions warrant consideration by the decision-maker, quantify and disclose those emissions in the environmental document (40 Code of Federal Regulations [CFR] 1508.25). In assessing direct emissions, an agency should look at the consequences of actions over which it has control or authority (Public Citizen, 541 U.S. at 768). When a proposed Federal action meets an applicable threshold for quantification and reporting, as discussed above, the CEQ proposes that the agency should also consider mitigation measures and reasonable alternatives to reduce proposed action-related GHG emissions. Analysis of emissions sources should take account of all phases and elements of the proposed action over its expected life, subject to reasonable limits based on feasibility and practicality. For proposed actions evaluated in an Environmental Impact Statement (EIS), Federal agencies typically describe their consideration of the energy

requirements of a proposed action and the conservation potential of its alternatives (40 CFR 1502.16(e)). Within this description of energy requirements and conservation opportunities, agencies should evaluate GHG emissions associated with energy use and mitigation opportunities and use this as a point of comparison between reasonable alternatives.

The CEQ further proposes that when scoping the impact of climate change on the proposal for agency action, the sensitivity, location, and timeframe of a proposed action will determine the degree to which consideration of these predictions or projections is warranted. As with analysis of any other present or future environment or resource condition, the observed and projected effects of climate change that warrant consideration are most appropriately described as part of the current and future state of the proposed action's affected environment (40 CFR 1502.15). Based on that description of climate change effects that warrant consideration, the agency may assess the extent that the effects of the proposal for agency action or its alternatives will add to, modify, or mitigate those effects. Such effects may include, but are not limited to, effects on the environment, on public health and safety, and on vulnerable populations who are more likely to be adversely affected by climate change. The final analysis documents an agency's assessment of the effects of the actions considered, including alternatives, on the affected environment.

4.4.2 Applicable Regulations, Plans, and Policies/Management Goals

The Federal, State, and local laws and policies listed in Table 4-29 pertain to the control and mitigation of greenhouse gas emissions.

4.4.3 Proposed Action and Alternatives: Direct and Indirect Impacts

Direct GHG emissions are those from project area sources, such as landscaping and maintenance of proposed land uses, and mobile sources, such as project-generated vehicle trips associated with on-site facilities and visitors/deliveries to the project site. Indirect GHG emissions are those from off-site stationary sources associated with water and energy consumption.

Generation of electricity can produce GHG with the criteria air pollutants that have been traditionally regulated under the Federal and State CAAs. For fossil fuel-fired power plants, GHG emissions primarily include CO_2, with much smaller amounts of nitrous oxide (N_2O) and methane (CH_4, often from unburned natural gas). For solar energy generation projects, the stationary source GHG emissions are much smaller than for fossil fuel-fired power plants.

Table 4-29 Climate Change Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Mandatory Reporting of GHGs	This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 $MTCO_2e$ emissions per year.
State	
California Global Warming Solutions Act of 2006, AB 32 (Statutes 2006; Chapter 488; Health and Safety Code Sections 38500 et seq.)	This act requires the ARB to enact standards that will reduce GHG emissions to 1990 levels by 2020. Electricity production facilities are regulated by the ARB.
Title 17 CCR, Subchapter 10, Article 2, Sections 95100 et seq.	These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006.
Title 20, CCR, Section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009	These regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a GHG emission standard of 0.5 $MTCO_2$/MWh or 1,100 lbs CO_2/MWh.
EO S-13-08	Directs a number of State agencies to address California's vulnerability to sea level rise caused by climate change.

Table Sources: United States Environmental Protection Agency (EPA) website: http://www.epa.gov/climatechange/initiatives/index.html (accessed 6/3/2010), and California Air Resources Board (ARB) website: http://www.arb.ca.gov/cc/cc.htm (accessed 6/3/2010).

Table Key: AB = Assembly Bill; CCR = California Code of Regulations; CO_2/MWh = carbon dioxide per megawatt-hour; CPUC = California Public Utilities Commission; EO = Executive Order; GHG = greenhouse gas; lbs = pounds; $MTCO_2e$ = metric tons of carbon dioxide equivalent; $MTCO_2$/MWh = metric ton of carbon dioxide per megawatt-hour.

Mobile sources for solar energy generation projects are likely to also be less than for fossil fuel-fired power plants as there will not be any fuel transport needed, but the site maintenance and worker transport vehicle use is likely to be similar. Section 4.2, Air Quality, discusses the mirror washing operations and associated vehicle use in detail, along with measures to minimize the associated vehicle emissions. Other sources of GHG emissions include sulfur hexafluoride (SF_6) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented in this analysis as some of the compounds have very high global warming potential.

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four

applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is provided in Appendix B, the Determination of NEPA Adequacy (DNA).

4.4.3.1 IVS Project: 750 MW Alternative

Construction Impacts

Construction of industrial facilities such as power plants requires coordination of substantial amounts of equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include GHGs. Construction of the IVS project would generate GHG emissions. To date, there is no study that quantitatively assesses all the GHG emissions associated with each phase of the construction of an individual development or project.

Overall, the following activities associated with the IVS project could directly or indirectly contribute to the generation of GHG emissions:

- **Removal of Vegetation:** The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, planting of replacement vegetation would result in additional carbon sequestration and would minimize the carbon footprint of the IVS project.

- **Construction Activities:** During construction of the IVS project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment.

- **Water Use:** California's water conveyance system is energy-intensive. Preliminary estimates indicate that the total energy used to pump and treat this water exceeds 6.5 percent of the total electricity used in the State per year.[1]

[1] California Energy Commission (CEC), 2004. Water Energy Use in California (online information sheet) Sacramento, CA, August 24. Website: energy.ca.gov/pier/iaw/industry/water.html. Accessed July 24, 2007.

- **Solid Waste Disposal:** Solid waste generated by construction of the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.

- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips and heavy-duty construction equipment.

The estimated GHG emissions for a peak construction day for the IVS project are provided in Table 4-30.

Table 4-30 Estimated Construction GHG Emissions for the IVS Project

Construction Equipment	CO_2 Emission Rates (lbs/day)	CH_4 Emission Rates (lbs/day)	CO_2e Emission Rates (lbs/day)
Motor Grader	4,200	0.47	4,200
Wheeled Dozer	7,700	0.94	7,700
Loader/Backhoe	2,100	0.27	2,100
Scraper	4,200	0.44	4,200
Miscellaneous	3,900	0.28	3,900
Mechanic Truck	29	0.0016	29
Fuel Truck	14	0.00082	14
Foreman Truck	14	0.00082	14
Water Truck	170	0.0095	170
Worker Commute	1,300	0.093	1,300
Total Daily	**24,000**	**2.5**	**24,000**

Table Source: LSA Associates, Inc. (June 2010).

Table Key: CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; lbs/day = pounds per day.

These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. While construction will result in a slight increase in GHG emissions during construction, it is anticipated that any increase in GHG emissions due to

construction will be offset by the net reduction in GHG emissions from a solar power plant replacing non-renewable energy power plants.

The construction-related GHG emission sources described above would remain the same with the applicant proposed modifications with the exception of the emissions associated with trucking water from the Dan Boyer Water Company well to the IVS project site for construction and initial operations. It is anticipated that water trucked to the construction site would require an additional 13 round trips a day between the well and the IVS project site. The capacity of each truck is 7,000 gallons (gal). Each truck would travel approximately 7 miles (mi) one-way (14 mi round trip). The estimated GHG emissions from all construction activities with water delivery via truck were estimated. The water truck trips would generate a small amount of the total construction-related GHG emissions, as shown in Table 4-31. As shown the GHG emissions associated with the water truck deliveries would represent only a small amount of GHG emissions during project construction.

Table 4-31 Estimated Entire Construction Period GHG Emissions (MT)

Entire Construction Period GHG Emissions	CO_2	CH_4	N_2O	CO_2e
Total of Other Source Emissions	18,399.22	2.96	0.99	18,766.68
Total Emissions from Water Delivery Trucks	434.44	0.01	0.01	438.09
Total Entire Construction Period GHG Emissions	**18,833.66**	**2.97**	**1.00**	**19,204.77**
% Water Supply Emissions of Total Emissions	2.3%	0.3%	1.0%	2.3%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from construction equipment, construction trucks, worker vehicles, security vehicles and SunCatcher delivery trucks.

Table Key: CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; MT = metric tones; N_2O = nitrous oxide.

The other three applicant-proposed modifications (transmission line, water line, and hydrogen storage) would require construction very similar to the construction for the IVS project as originally proposed for those project components. Therefore, the construction-related GHG emissions of those three applicant-proposed modifications would be the same as under the original IVS project.

Operations Impacts

Operation of the IVS project would cause GHG emissions from the facility maintenance fleet and employee trips, emergency fire pump engine, and sulfur hexafluoride emissions from new electrical component equipment. The IVS project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard

requirements of California Senate Bill (SB) 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903(b)(1)).

The ARB has promulgated regulations for mandatory GHG emission reporting to comply with the California Global Warming Solutions Act of 2006. The IVS project, which will generate electricity entirely from solar power, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities (California Code of Regulations [CCR] Title 17, Section 95101(c)(1)). However, the IVS project may be subject to future reporting requirements and GHG reductions or trading requirements as additional State and/or Federal GHG regulations are developed and implemented.

The estimated operations GHG emissions for the IVS project are shown in Table 4-32. Operation of the IVS project would result in GHG emissions from the facility maintenance fleet and employee trips, emergency fire pump engine, and sulfur hexafluoride emissions from new electrical component equipment.

Table 4-32 Estimated Operating GHG Emissions for the IVS Project

Operating Emissions	Annual MT CO_2 Equivalent ($MTCO_2e$) (Table Note 1)
On-site Combustion (Table Note 2)	1,043
Off-site Total (Table Note 2)	673
Equipment Leakage (SF_6)	272
Total Project GHG Emissions – MTCO2e (Table Note 3)	**1,988**
Facility MWh per year c	1,620,000
Facility GHG Performance ($MTCO_2e$/MWh)	0.00123

Table Sources: SA/DEIS Appendix AIR-1, William Walters, P.E.

Table Note 1: One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

Table Note 2: The vast majority of the CO_2e emissions, over 99%, is CO_2 from these two emission sources.

Table Note 3: Approximately a 25% capacity factor.

Table 4-32 shows what the operation of the IVS project, as permitted, could potentially emit in GHG on an annual basis. As shown, all the GHG emissions are converted to CO_2 equivalent and totaled. Electricity generation GHG emissions are generally dominated by CO_2 emissions from carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled. For the IVS project, the primary fuel, solar energy, is GHG free, but there would still be direct and indirect gasoline and diesel fuel use in the maintenance vehicles, offsite delivery vehicles, staff and employee vehicles, and the two diesel-fueled emergency engines. An additional source of GHG emissions for the IVS project is SF_6 from electrical equipment leakage.

The IVS project is estimated to emit, directly from primary and secondary emission sources, nearly 2,000 metric tonnes of CO_2 equivalent GHG emissions per year. The IVS project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368. In summary, the IVS project has an estimated GHG emission rate of 0.00123 $MTCO_2e$/MWh, well below the Greenhouse Gas Emission Performance Standard of 0.500 $MTCO_2$/MWh.

While it is expected that this project will generate some GHG, 0.00123 $MTCO_2e$/MWh is a very small rate compared to non-renewable energy power plants. For instance coal power plants typically generate 0.96 $MTCO_2e$/MWh, and gas power plants typically generate 0.60 $MTCO_2e$/MWh.[1]

The operational emission sources described above would remain the same with the applicant-proposed modifications with the exception of the emissions associated with trucking water to the site for initial operation. That water will be delivered to the IVS site by 7 daily truck round trips with each water truck carrying 7,000 gal. Each truck would travel approximately 7 mi one-way (14 mi round trip). For calculating operations GHG emissions under the worst-case truck transport option, the analysis assumed that 7 truck round trips would be made each day, 7 days a week. The total operation GHG emissions were estimated including the delivery of water via truck. The water truck trips would represent a small amount of the total operations-related GHG emissions as shown in Table 4-33.

Table 4-33 Estimated Annual Maximum Operational GHG Emissions (MT/yr)

Annual Maximum Operational GHG Emissions	CO_2	CH_4	N_2O	SF_6	CO_2e
Total of Other Source Emissions	1,647.80	0.52	0.19	0.01	1,987.70
Total Emissions from Water Delivery Trucks	70.18	0.00	0.00	–	70.77
Total Annual Maximum Operational GHG Emissions	**1,717.88**	**0.52**	**0.19**	**0.01**	**2,058.47**
% Water Supply Emissions of Total Emissions	4.1%	0.00%	0.00%	–	3.4%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table General Note: Other source emissions are emissions from the diesel generator, maintenance and security vehicles and equipment, worker vehicles, visitor cars, delivery trucks, emission leakage from proposed circuit breakers and other transmission system equipment.

Table Key: CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; MT/yr = metric tones per year; N_2O = nitrous oxide; SF_6 = sulfur hexafluoride.

[1] US Energy Information Administration website, *Carbon Dioxide Emissions from the Generation of Electric Power in the United States*, July 2000, http://www.eia.doe.gov/electricity/page/co2_report/co2report.html, accessed June 3, 2010.

The other three applicant-proposed modifications (transmission line, water line, and hydrogen storage) would result in operations very similar to the operation of the IVS project as originally proposed for those project components. Therefore, the operations-related air quality impacts of those three applicant-proposed modifications would be the same as under the original IVS project.

Summary

While the IVS project would emit some GHG emissions, the contribution to the system build out of renewable resources to meet the goals of the Renewable Portfolio Standard (RPS) in California would result in a net cumulative reduction of energy generation and GHG emissions from new and existing fossil-fired electricity resources. Electricity is produced by operation of inter-connected generation resources. Operation of one power plant, like the IVS project, affects all other power plants in the interconnected system. The operation of the IVS project would affect the overall electricity system operation and GHG emissions in several ways:

- The IVS project would provide low-GHG, renewable generation.
- The IVS project would facilitate to some degree the replacement of high GHG emitting (e.g., out-of-state coal) electricity generation that must be phased out to meet the State's 2006 Emissions Performance Standard.
- The IVS project could facilitate to some extent the replacement of generation provided by aging fossil-fired power plants that use once-through cooling.

These system impacts would result in a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Therefore, the IVS project would contribute to a cumulative overall reduction in GHG emissions from power plants, would not worsen current conditions, and would not result in impacts that are cumulatively significant.

4.4.3.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative would result in GHG emissions during construction and operation very similar to those described in the previous section for the IVS project because the Agency Preferred Alternative would disturb nearly the same amount of land and would operate about 40 less SunCatchers. The Agency Preferred Alternative would also result in very similar benefits related to providing low-GHG renewable energy, and facilitating to some degree the replacement of high GHG emitting electricity generation that must be phased out in the future to meet the State's 2006 Emissions Performance Standard.

The short- and long-term GHG emission effects of the four applicant-proposed modifications would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to the four proposed modifications.

4.4.3.3 300 MW Alternative

The 300 MW Alternative would consist of 12,000 SunCatchers with a net generating capacity of approximately 300 MW occupying approximately 2,600 acres of land. The 300 MW Alternative would be the same as Phase 1 of the IVS project. Therefore, the peak daily construction emissions for the 300 MW Alternative are expected to be the same as for the IVS project. The 300 MW Alternative would be approximately 40 percent of the size of the IVS project and, therefore, the operational emissions for 300 MW Alternative would be expected to be approximately 40 percent of those for the IVS project. Table 4-34 shows the estimated operational emissions for the 300 MW Alternative.

Table 4-34 Estimated Operating GHG Emissions for the 300 MW Alternative

Operating Emissions	Annual MT CO_2 Equivalent ($MTCO_2e$) (Table Note 1)
Onsite Combustion (Table Note 2)	417
Offsite Total (Table Note 2)	269
Equipment Leakage (SF_6)	109
Total Project GHG Emissions – MTCO2e (Table Note 2)	**795**
Facility MWh per year (Table Note 3)	648,000
Facility GHG Performance ($MTCO_2e$/MWh)	0.00123

Table Sources: SA/DEIS Appendix AIR-1, William Walters, P.E.

Table Note 1: One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

Table Note 2: The vast majority of the CO_2e emissions, over 99%, is CO_2 from these two emission sources.

Table Note 3: Approximately a 25% capacity factor.

The short- and long-term GHG effects of the four applicant-proposed modifications would be similar under the 300 MW Alternative to the effects described earlier for the IVS project because this alternative would result in similar construction and operation activities compared to the IVS project relative to the four proposed modifications.

4.4.3.4 Drainage Avoidance #1 Alternative

The Drainage Avoidance #1 Alternative would consist of 25,290 SunCatchers with a net generating capacity of approximately 632 MW occupying the entire IVS project site but avoiding placement of SunCatchers in the primary drainages on the site. The peak daily construction emissions for the Drainage Avoidance #1 Alternative are expected to be the same as for the IVS project. The Drainage Avoidance #1 Alternative is approximately 84 percent the size of the IVS project and, therefore, the operational emissions for the Drainage Avoidance #1 Alternative are expected to be approximately 84 percent of those shown for the IVS project 1. Table 4-35 shows the estimated operation GHG emissions for the Drainage Avoidance #1 Alternative.

Table 4-35 Estimated Operating GHG Emissions for the Drainage Avoidance #1 Alternative

Operating Emissions	Annual MT CO_2 Equivalent ($MTCO_2e$) (Table Note 1)
Onsite Combustion (Table Note 2)	879
Offsite Total (Table Note 2)	567
Equipment Leakage (SF_6)	229
Total Project GHG Emissions – MTCO2e (Table Note 2)	**1,675**
Facility MWh per year (Table Note 3)	1,365,000
Facility GHG Performance ($MTCO_2e$/MWh)	0.00123

Table Sources: SA/DEIS Appendix AIR-1, William Walters, P.E.

Table Note 1: One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

Table Note 2: The vast majority of the CO_2e emissions, over 99%, is CO_2 from these two emission sources.

Table Note 3: Approximately a 25% capacity factor.

The short- and long-term air quality impacts of the four applicant-proposed modifications would be similar under the Drainage Avoidance #1 Alternative to the effects described earlier for the IVS project because this alternative would result in similar construction and operation activities compared to the IVS project relative to the four proposed modifications.

4.4.3.5 Drainage Avoidance #2 Alternative

The Drainage Avoidance #2 Alternative would consist of 16,915 SunCatchers with a net generating capacity of approximately 423 MW occupying only the central part of the IVS project site, and avoiding the major drainages east and west of that central part of the site. The peak daily construction emissions for the Drainage Avoidance #2 Alternative are expected to be the same as for the IVS project. The Drainage Avoidance #2 Alternative is approximately 56 percent the size of the IVS project and, therefore, the operation emissions for the Drainage Avoidance

#2 Alternative are expected to be approximately 56 percent of those shown for the IVS project. Table 4-36 shows the operational emissions for the Drainage Avoidance #2 Alternative.

Table 4-36 Estimated Operating GHG Gas Emissions for the Drainage Avoidance #2 Alternative

Operating Emissions	Annual MT CO_2 Equivalent ($MTCO_2e$) (Table Note 1)
Onsite Combustion (Table Note 2)	879
Offsite Total (Table Note 2)	567
Equipment Leakage (SF_6)	229
Total Project GHG Emissions – MTCO2e (Table Note 2)	**1,675**
Facility MWh per year (Table Note 3)	1,365,000
Facility GHG Performance ($MTCO_2e$/MWh)	0.00123

Table Sources: SA/DEIS Appendix AIR-1, William Walters, P.E.

Table Note 1: One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

Table Note 2: The vast majority of the CO_2e emissions, over 99%, is CO_2 from these two emission sources.

Table Note 3: Approximately a 25% capacity factor.

The short- and long-term air quality impacts of the four applicant-proposed modifications would be similar under the Drainage Avoidance #2 Alternative to the effects described earlier for the IVS project because this alternative would result in similar construction and operation activities compared to the IVS project relative to the four proposed modifications.

4.4.3.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the right-of-way (ROW) grant for the proposed IVS project would not be approved by the BLM and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

The results of this No Action Alternative would be:

- The impacts of the IVS project would not occur. However, the land on which the IVS project is proposed would become available to other uses that are consistent with BLM's CDCA Plan.

- The benefits of the IVS project in displacing fossil fuel fired generation and reducing associated GHG emissions from gas-fired generation would not occur. State and Federal laws support the increased use of renewable power generation.

If the IVS project is not approved, renewable projects would likely be developed on other sites in Imperial County, the Mojave Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are two large wind projects proposed on BLM land within a few miles of the IVS project site in addition to large wind projects proposed in Mexico, south of the IVS project site. In addition, there are seven large solar projects proposed on BLM land within the area served by the BLM El Centro Field Office. There are currently 70 applications for solar projects covering 611,692 acres pending with BLM in the California Desert District.

It is expected that this No Action Alternative will result in similar levels of GHG emissions to the IVS project, because similar solar or other renewable energy power plants could be built in other locations.

4.4.3.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the ROW grant for the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the GHG emissions from the site, including carbon uptake, are not expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in the GHG benefits that would occur under the IVS project. However, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would be expected to result in similar beneficial GHGs in other locations.

4.4.3.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the ROW grant for the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, GHG emissions would result from the construction and operation of the solar technology and would likely be similar to the GHG emissions under the IVS project. Different solar technologies require different amounts of construction and operations maintenance; however, it is expected that all the technologies would provide the more significant benefit, like the IVS project, of displacing fossil fuel fired generation and reducing associated GHG emissions. As such, this No Action Alternative could result in GHG benefits similar to those under the IVS project.

4.4.4 Cumulative Impacts

Since 1970, the CEQ has construed the term "…major Federal actions significantly affecting the quality of the human environment…" as requiring the consideration of the "...overall, cumulative impact of the action proposed (and of further actions contemplated)." (35 Federal Register 7390, 7391 [1970]). "Cumulative impact" is defined in CEQ's National Environmental Policy Act (NEPA) regulations as the "…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 actions" 40 CFR 1508.7. The purpose of cumulative effects analysis is to document agency consideration of the context and intensity of the effects of a proposal for agency action, particularly whether the action is related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)). After such documentation, the dual purposes of NEPA will be satisfied.

The cumulative impacts study area and cumulative projects considered in the cumulative impacts analysis for climate change are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

The GHG assessment discussed in this section is a cumulative impact assessment and the findings described in this section are cumulative impact findings. The IVS project alone would not be sufficient to change global climate, but would emit GHG and, therefore, was analyzed as

a potential contributor to a cumulative impact in the context of existing GHG regulatory requirements and GHG energy policies. It is expected that the cumulative affect of the IVS project will be to reduce the total GHG emissions, because it reduces the need for traditional power plants and reduces the demand for fossil fuels.

4.4.5 Mitigation, Project Design Features, and Other Measures

No measures related to GHG emissions are proposed because the IVS project would result in beneficial GHG impacts. The project owner would have to comply with any future applicable GHG regulations formulated by the ARB or the EPA, such as GHG reporting or emissions cap and trade markets.

4.4.6 Summary of Impacts

Table 4-37 summarizes the direct, indirect, short-term, long-term, and cumulative adverse and beneficial effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to GHG emissions.

As shown in Table 4-37, there would be no unavoidable adverse impacts related to GHG emissions under the IVS project, the Agency Preferred Alternative, and the other Build Alternatives.

4.4.7 Potential Effects of Climate Change on the IVS Project

“Adaptation strategies” refer to how to plan for the effects of climate change and strengthen or protect from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the infrastructure in various ways, such as damaging buildings by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

Climate change adaption must also involve the natural environment as well. Efforts are underway on a Statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

Table 4-37 Summary of Climate Change Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Generation of GHG emissions during construction and operation of the SunCatchers. Beneficial effect in replacing high GHG emitting electricity generation with a lower greenhouse emission renewable energy source.	None. Possible need to comply with any future GHG regulations.	None.
709 MW Alternative: Agency Preferred Alternative	Generation of slightly lower GHG emissions during construction and operations than the IVS project. Beneficial cumulative effect in replacing high GHG emitting electricity generation with a lower greenhouse emission renewable energy source.	Same as the IVS project.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	this Alternative.		
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No GHG emissions or beneficial effects on the project site.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No GHG emissions or beneficial effects on the project site.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Could potentially result in GHG emissions and GHG reduction benefits similar to the IVS project and the Agency Preferred Alternative.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; GHG = greenhouse gas; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

On November 14, 2008, Governor Schwarzenegger signed Executive Order (EO) S-13-08 which directed a number of State agencies to address California's vulnerability to sea level rise caused by climate change.

The California Resources Agency [now the Natural Resources Agency, (CNRA)], through the interagency Climate Action Team, was directed to coordinate with local, regional, State, and Federal public and private entities to develop a State Climate Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts and then outline solutions that can be implemented within and across State agencies to promote resiliency.

As part of its development of the Climate Adaptation Strategy, the CNRA was directed to request the National Academy of Sciences to prepare a Sea Level Rise Assessment Report by December 2010 to advise how California should plan for future sea level rise. The report is to include:

- Relative sea level rise projections for California, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates;
- The range of uncertainty in selected sea level rise projections;
- A synthesis of existing information on projected sea level rise impacts to State infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems;
- A discussion of future research needs regarding sea level rise for California.

EO S-13-08 also directed the California Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance and operational improvements of the system and economy of the State.

Prior to the release of the final Sea Level Rise Assessment Report, all State agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or are programmed for construction funding the next five years (through 2013), or are routine maintenance projects as of the date of EO S 13 08 may, but are not required to, consider these planning guidelines. Sea level rise estimates should also be used in conjunction with information regarding local uplift and

subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data. (EO S-13-08 allows some exceptions to this planning requirement.)

The IVS project is not mandated to consider sea level rise because of the distance of the project site from the Pacific Ocean.

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4.5 Cultural and Paleontological Resources

4.5.1 Methodology

As presented in Section 3.5, Cultural Resources, the United States Bureau of Land Management (BLM) has authorized a consultant under permit with the BLM to conduct specific identification efforts for the proposed Imperial Valley Solar (IVS) project, including a review of the existing literature and records, cultural resources surveys, ethnographic studies, and geomorphological studies to identify historic properties that might be located within the project Area of Potential Effects (APE). URS Corporation (URS) and AECOM have been permitted to complete all of the investigations necessary to identify and evaluate cultural resources located in the APE for both direct and indirect effects.

As discussed in Section 3.5, archaeological surveys as part of the Class III inventory of the APE identified 459 cultural resources. Evaluations regarding the eligibility of the 459 resources in the APE for listing in the National Register of Historic Places (National Register) have not yet been completed.

Additionally, the designated Juan Bautista de Anza National Historic Trail (Anza Trail) corridor is partially within the APE. BLM has directed the applicant to perform a review of the pertinent historic documents and satellite imagery analyses to assess the physical presence, if any, of this historic trail in the APE.

4.5.2 Definition of Resources

The descriptions of the classes of resources are as follows:

- **Habitation:** Site has, at a minimum, flaked stone tools and evidence of food processing and fire-affected rock/hearths. Site contains a wide variety of artifacts and materials. Habitation sites in the IVS project area may include flakes, tools, groundstone, ceramics, fire-affected rocks, midden, rock features (domestic and storage), and human remains.

- **Temporary Camp:** Flaked stone tools, evidence of food processing, and fire-affected rock/hearths.

- **Long-term:** Multiple artifact categories, evidence of use of fire, and midden.
- **Resource Extraction/Processing:** Site contains artifacts associated with specific resource extraction or processing activities. Processing/extraction sites in the IVS project area include:
    - **Plant Processing:** Associated artifacts include groundstone, manos, metates, pestles, bedrock storage facilities, and bedrock milling features. Groundstone was also used to process fish, small animals, pigments, and for hide-tanning. Flaked lithics were also used for cutting/harvesting plants prior to grinding or for preparing vegetal construction materials.
    - **Animal Processing:** Associated artifacts include lithics, fish traps, and faunal bone.
    - **Lithic Reduction:** Associated artifacts include lithic tools, flakes, debitage, cores, and blanks.
    - **Lithic Processing:** Evidence of heat treatment. Associated artifacts include flakes, debitage, and cores.
    - **Groundstone Production:** Associated artifacts or features include sandstone and granite outcrops, basalt boulders, etc.
- **Travel:** Trails/footpaths, including trail markers.
- **Rock Features:** Cairns, rock alignments, rock rings, and cleared circles.
- **Traditional Cultural Property:** A traditional cultural property is defined generally as property that is important to a living group or community because of its association with cultural practices or beliefs that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. It is a place that may figure in important community traditions or in culturally important activities, such as traditional gathering areas, prayer sites, or sacred/ceremonial locations. These sites may or may not contain features, artifacts, or physical evidence, but are usually identified through consultation. A traditional cultural property may be eligible for inclusion in the National Register.
- **Other:** All other sites that do not fit into the above categories, including ceramics.

Site classes for historical archaeological resources are:

- **Habitation:** In addition to food-related refuse, sites that contain evidence of domestic activity. Features may include tent pads, cleared areas, campfire rings, and foundations or other evidence of more than casual use.
- **Historic Refuse:** Sites that contain primary or secondary refuse deposits or concentrations of debris.
    - **Food Containers:** Primarily cans
    - **Beverage Containers:** Bottles and cans
    - **Mixed Domestic:** In addition to food and beverage containers, a variety of materials including such items as crockery, glassware, buttons, wire, toys, etc.
    - **Construction:** Cement, milled lumber, nails, paint, tile, etc.
    - **Target Practice:** Shell casings, fragmentary.
- **Gravel Extraction/Mining:** Indicated by scraping scars, rock piles, and access roads.
- **Surveying:** Trash piles associated with surveying activities and historic survey markers.
- **Transportation:** A linear feature designed to facilitate the transportation of people:
    - **Roads:** Unpaved.
    - **Trails:** Wagon trails and footpaths.
- **Military:** Any site associated with military activities.
- **Rock Features:** Cairns, rock alignments, and rock rings.
- **Other:** All other sites that do not fit into the above categories.

When the functional site classes are applied to the built environment resources, the list is shorter and the only class that overlaps with the archaeological resource classes is habitation. Site classes for built-environment resources are:

- **Habitation:** Residential buildings.
- **Industrial:** Processing or manufacturing plant.
- **Transportation:** A linear feature designed to facilitate the transportation of people:
  - **Roads:** Paved.
  - **Railroads:** With intact crossties and rails.
- **Water Conveyance:** Any feature or device constructed to transport water over a distance (e.g., irrigation canals, ditches, flumes, pipes).

4.5.3 Applicable Regulations, Plans, and Policies/Management Goals

4.5.3.1 Evaluation of Historical Significance Under the National Environmental Policy Act

The National Environmental Policy Act (NEPA) established national policy for the protection and enhancement of the environment. Part of the function of the Federal government in protecting the environment is to "…preserve important historic, cultural, and natural aspects of our national heritage." Cultural resources need not be determined eligible for the National Register as in the National Historic Preservation Act (NHPA) of 1966 (as amended) to receive consideration under NEPA. NEPA is implemented by regulations of the Council on Environmental Quality, 40 Code of Federal Regulations (CFR) 1500–1508. NEPA provides for public participation in the consideration of cultural resources issues, among others, during agency decision-making.

4.5.3.2 Evaluation of Historical Significance Under Section 106 (Eligibility of Cultural Resources for Inclusion in the National Register of Historic Places)

The Federal government has developed laws and regulations intended to protect cultural resources that may be affected by actions undertaken, regulated, or funded by Federal agencies. Cultural resources are considered during Federal undertakings chiefly under Section 106 of the NHPA of 1966 (as amended) through one of its implementing regulations, 36 CFR 800, Protection of Historic Properties, as amended. Properties of traditional religious and

cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the NHPA.

Section 106 of the NHPA (16 United States Code [USC] 470f) requires Federal agencies to consider the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR Part 800.1). Under Section 106, the significance of any adversely affected cultural resource is assessed and mitigation measures are proposed to resolve effects. Significant cultural resources (historic properties) are those resources that are listed in or are eligible for listing on the National Register per the criteria listed at 36 CFR 60.4 and are presented in the following subsection.

The NHPA established the ACHP and State Historic Preservation Officers (SHPO) to assist Federal and State officials regarding matters related to historic preservation. As mentioned above, the administering agency, the ACHP, has authored regulations implementing Section 106 that are provided in 36 CFR Part 800, *Protection of Historic Properties* (revised effective August 5, 2004). 36 CFR Part 800 provides detailed procedures, called the Section 106 process, by which the assessment of impacts on archaeological and historical resources, as required by the NHPA, is implemented.

Given that the IVS project site is on lands managed by BLM and the United States Army Corps of Engineers (Corps) and requires authorization by the BLM and the Corps, the proposed action is considered an undertaking and therefore must comply with the NHPA and implementing regulations. NEPA addresses compliance with the NHPA and the required environmental documentation for a proposed Federal action; however, project compliance with NEPA does not mean the project is in compliance with the NHPA.

According to the NHPA, three steps are required for compliance: (1) identification of significant resources that may be affected by an undertaking; (2) assessment of project impacts on those resources; and (3) development and implementation of mitigation measures to offset or eliminate adverse impacts. All three steps require consultation with interested Native American tribes, local governments, and other interested parties.

4.5.3.3 Identification and National Register of Historic Places Evaluation

36 CFR Part 800.3 discusses the consultation process. Section 800.4 sets out the steps the ACHP must follow to identify historic properties. 36 CFR Part 800.4(c)(1) outlines the process for National Register eligibility determinations.

The Historic Sites, Buildings and Antiquities Act of 1935 required the survey, documentation, and maintenance of historic and archaeological sites in an effort to determine which resources commemorate and illustrate the history and prehistory of the United States. The NHPA expanded that legislation and assigned the responsibility for carrying out this policy to the United States National Park Service (NPS). Per NPS regulations, 36 CFR Part 60.4, and guidance published by the NPS, *National Register Bulletin, Number 15, How to Apply the National Register Criteria for Evaluation,* different types of values embodied in districts, sites, buildings, structures, and objects are recognized. These values fall into the following categories:

(1) **Associate Value (Criteria A and B):** Properties significant for their association with or linkage to events (Criterion A) or persons (Criterion B) important in the past.

(2) **Design or Construction Value (Criterion C):** Properties significant as representatives of the human-made expression of culture or technology.

(3) **Information Value (Criterion D):** Properties significant for their ability to yield important information about prehistory or history.

The quality of *significance* in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess *integrity* of location, design, setting, materials, workmanship, feeling, and association. Cultural resources that are determined eligible for listing in the National Register, along with SHPO concurrence, are termed “historic properties” under Section 106 and are afforded the same protection as sites listed in the National Register.

4.5.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid

impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.5.4.1 Definition of Direct and Indirect Impacts

Direct and Indirect Effects Under the National Environmental Policy Act

Direct effects under NEPA are those "…which are caused by the [proposed or alternative] action and [which] occur at the same time and place" (40 CFR Section 1508.8(a)). Indirect effects are those "…which are caused by the [proposed or alternative] action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR Section 1508.8(b)).

Direct and Indirect Effects Under Section 106

The Section 106 regulation narrows the range of direct effects and broadens the range of indirect effects relative to the definitions of the same terms under NEPA. The regulatory definition of "effect," pursuant to 36 CFR Section 800.16(i), is: "…means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the [National Register]." In practice, a direct effect under Section 106 is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character (e.g., visual intrusion, auditory, and atmospheric effects) and reasonably foreseeable effects that may occur at some point subsequent to the implementation of the proposed undertaking are referred to in the Section 106 process as indirect effects.

National Register of Historic Places Determination of Eligibility

It is the BLM's intent to render preliminary determinations of eligibility on resources prior to the Record of Decision (ROD) and provide opportunity for consulting parties and the public to comment on the agency's determinations prior to submitting final determinations to the SHPO for review and comment. Determinations that the BLM may render are based on cultural resources documentation and recommendations that are currently under review and have not necessarily been accepted or approved by the BLM. For a limited number of cultural resources, primarily archaeological sites limited to their potential to yield significant information on prehistory or history, the BLM may treat those sites as eligible for the National Register for project management purposes and either direct that additional testing be conducted for purposes of evaluation or that adverse effects to the property be resolved pursuant to the prescriptions of the Historic Properties Treatment Plan (HPTP).

Assessment of Impacts

The specific assessment of the potential impacts of the IVS project and the other Alternatives is based on the three following observations:

(1) Whereas testing has not been completed, based on surface observations and ongoing consultation a subset of sites will qualify for the National Register as being significant cultural resources.

(2) Given the high quantity and density of cultural resources present, cultural resources cannot be completely avoided by project construction.

(3) The potential exists for buried archaeological deposits.

4.5.4.2 Significant Effects Under the National Environmental Policy Act

Significant effects under NEPA require considerations of both context and intensity (40 CFR Section 1508.27) as follows:

(1) **Context:** This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(2) **Intensity:** This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

   (a) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

   (b) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

(3) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

(4) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

(5) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register or may cause loss or destruction of significant scientific, cultural, or historical resources.

(6) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

4.5.4.3 Adverse Effects Under Section 106

In accordance with 36 CFR Part 800.5 of the ACHP's implementing regulations, which describes criteria for adverse effects, impacts on cultural resources are considered significant if one or more of the following conditions would result from implementation of the proposed Federal action:

(1) An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register. For the purpose of determining the type of effect, alteration to features of a property's location, setting, or use may be relevant, depending on the property's significant characteristics, and should be considered.

(2) An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

(a) Physical destruction, damage, or alteration of all or part of the property;

(b) Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;

(c) Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting;

(d) Neglect of the property, resulting in its deterioration or destruction; or

(e) Transfer, lease, or sale of the property.

Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. A formal effect finding under Section 106 relates to the proposed or alternative action as a whole rather than relating to individual resources.

4.5.4.4 IVS Project: 750 MW Alternative

Cultural Resources

Table 4-38 summarizes the number of known cultural resources within the boundaries of the site for the 750-megawatt (MW) Alternative (the proposed IVS project). Those sites are described briefly in Appendix I, Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative**.**

Regarding impacts and the IVS project:

- Whereas 378 resources are present, the IVS project avoids known locations of habitation sites with human remains.

Based on the information and analysis available to date, the IVS project is anticipated to have the following effects/impacts related to cultural resources:

(1) Significant effect per NEPA.

(2) Adverse effect per Section 106 of the NHPA.

Mitigation is discussed in Section 4.5.6, Mitigation, Project Design Features, and Other Measures.

Table 4-38 Summary of Cultural Resources Impacted by the Alternatives

Alternative	Number of Cultural Resources Potentially Impacted	Effect Under NEPA	Effect Under Section 106 of the NHPA
Agency Preferred Alternative	359	Significant	Adverse
IVS Project	378	Significant	Adverse
300 MW Alternative	168	Significant	Adverse
Drainage Avoidance #1 Alternative	320	Significant	Adverse
Drainage Avoidance #2 Alternative	154	Significant	Adverse
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impact	No impact	No impact
No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impact	No impact	No impact
No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same as the Agency Preferred Alternative or the IVS project	Significant	Adverse

Table Key: CDCA = California Desert Conservation Area; IVS = Imperial Valley Solar; MW = megawatt; NEPA = National Environmental Policy Act; NHPA = National Historic Preservation Act; ROW = right-of-way.

The applicant-proposed modifications to shift the transmission line, change the hydrogen storage system, and use an alternative water supply for construction and initial operations would not affect cultural resources differently than analyzed above for the IVS project. However, the water line alignment was modified slightly to follow the Evan Hewes Highway ROW where feasible to avoid sensitive resources including as many known cultural resources as possible. Those areas were the subject of archeological study. The results of that work are provided in the draft final Class III Inventory (June 2010). The survey corridor for the realigned water line includes approximately 80 ac. By locating the waterline closing to the Evan Hewes Highway ROW, a greater amount of the waterline alignment would be placed in already disturbed areas, avoiding areas that may be more sensitive for biological and cultural resources. As a result, the waterline realignment would avoid seven known cultural resources not avoided by the original IVS project.

Paleontological Resources

The paleontological formations on the IVS project site that have moderate to high sensitivity could be adversely affected during construction as a result of disturbance by grading or construction activities; unauthorized, unmonitored excavations; unauthorized collection of fossil

materials; dislodging of fossils from their preserved environment (fossils out of context); and/or physical damage to fossil specimens. Measures PAL-1 through PAL-7, provided later in this section, are intended to ensure that the paleontological resource impacts during construction of the IVS project would not be adverse.

No impacts to paleontological resources are anticipated during the operation of the IVS project.

The applicant-proposed modifications would be in the same areas and formations as described above for the IVS project and the construction of those modifications would result in impacts to paleontological resources similar to the impacts described above for the IVS project. These modifications would not result in impacts to paleontological resources during operations.

4.5.4.5 709 MW Alternative: Agency Preferred Alternative

Cultural Resources

Table 4-38 summarizes the number of known cultural resources within the boundaries of the site for the Agency Preferred Alternative. Those sites are described briefly in Appendix I**.**

Regarding impacts and the Agency Preferred Alternative:

- Whereas 359 resources are present, the Agency Preferred Alternative avoids known locations of habitation sites with human remains.
- This Agency Preferred Alternative will avoid part of the historic corridor of the Anza Trail.

Based on the information and analysis available to date, the Agency Preferred Alternative is anticipated to have the following effects/impacts related to cultural resources:

(1) Significant effect per NEPA.

(2) Adverse effect per Section 106 of the NHPA.

Mitigation is discussed in Section 4.5.6, Mitigation, Project Design Features, and Other Measures.

The short- and long-term impacts of the four applicant-proposed modifications related to cultural resources would be the same under the Agency Preferred Alternative as described earlier for

the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

Paleontological Resources

The construction of the Agency Preferred Alternative would result in the same impacts to paleontological resources as described above for the IVS project because the total area disturbed is very similar for the two alternatives. Measures PAL-1 through PAL-7 would apply to the Agency Preferred Alternative and are intended to ensure that the paleontological resource impacts that may occur during the construction of this alternative would not be adverse.

The short- and long-term impacts of the four applicant-proposed modifications related to paleontological resources would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.5.4.6 300 MW Alternative

Cultural Resources

Table 4-38 summarizes the number of known cultural resources within the boundaries of the site for the 300 MW Alternative. Those sites are described briefly in Appendix I.

Regarding impacts and the 300 MW Alternative:

- Whereas 168 resources are present, the 300 MW Alternative avoids known locations of habitation sites with human remains.
- The 300 MW Alternative will avoid part of the historic corridor of the Anza Trail.

Based on the information and analysis available to date, the 300 MW Alternative is anticipated to have the following effects/impacts related to cultural resources:

(1) Significant effect per NEPA.

(2) Adverse effect per Section 106 of the NHPA.

Mitigation is discussed in Section 4.5.6, Mitigation, Project Design Features, and Other Measures.

The short- and long-term impacts of the four applicant-proposed modifications related to cultural resources would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

Paleontological Resources

Although the area of disturbance for the 300 MW Alternative is smaller than for the IVS project, the potential for impacts to paleontological resources under the 300 MW Alternative would be the same as those described for the IVS project due to the presence of geological units with moderate to high paleontological sensitivity on the site. Measures PAL-1 through PAL-7 are intended to ensure that paleontological resource impacts that may occur during the construction of the 300 MW Alternative would not be adverse.

No impacts to paleontological resources are anticipated during the operation of the 300 MW Alternative.

The short- and long-term impacts of the four applicant-proposed modifications related to paleontological resources would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.5.4.7 Drainage Avoidance #1 Alternative

Cultural Resources

Table 4-38 summarizes the number of known cultural resources within the boundaries of the site for the Drainage Avoidance #1 Alternative. Those sites are described briefly in Appendix I.

Regarding impacts and the Drainage Avoidance #1 Alternative:

- Whereas 320 resources are present, the Drainage Avoidance #1 Alternative avoids known locations of habitation sites with human remains.
- The Drainage Avoidance #1 Alternative will avoid part of the historic corridor of the Anza Trail.

Based on the information and analysis available to date, the Drainage Avoidance #1 Alternative is anticipated to have the following effects/impacts related to cultural resources:

(1) Significant effect per NEPA.

(2) Adverse effect per Section 106 of the NHPA.

Mitigation is discussed in Section 4.5.6, Mitigation, Project Design Features, and Other Measures.

The short- and long-term impacts of the four applicant-proposed modifications related to cultural resources would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

Paleontological Resources

The area of disturbance for the Drainage Avoidance #1 Alternative is similar to the IVS project. Therefore, the potential for impacts to paleontological resources under the Drainage Avoidance #1 Alternative would be the same as those described for the IVS project due to the presence of geological units with moderate to high paleontological sensitivity on the site. Measures PAL-1 through PAL-7 are intended to ensure that paleontological resource impacts that may occur during the construction of the Drainage Avoidance #1 Alternative would not be adverse.

No impacts to paleontological resources are anticipated during operation of the Drainage Avoidance #1 Alternative.

The short- and long-term impacts of the four applicant-proposed modifications related to paleontological resources would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.5.4.8 Drainage Avoidance #2 Alternative

Cultural Resources

Table 4-38 summarizes the number of known cultural resources within the boundaries of the site for the Drainage Avoidance #2 Alternative. Those sites are described briefly in Appendix I.

Regarding impacts and the Drainage Avoidance #2 Alternative:

- Whereas 154 resources are present, the Drainage Avoidance #2 Alternative avoids known locations of habitation sites with human remains.
- The Drainage Avoidance #2 Alternative will avoid part of the historic corridor of the Anza Trail.

Based on the information and analysis available to date, the Drainage Avoidance #2 Alternative is anticipated to have the following effects/impacts related to cultural resources:

(1) Significant effect per NEPA.

(2) Adverse effect per Section 106 of the NHPA.

Mitigation is discussed in Section 4.5.6, Mitigation, Project Design Features, and Other Measures.

The short- and long-term impacts of the four applicant-proposed modifications related to cultural resources would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

Paleontological Resources

Although the area of disturbance for the Drainage Avoidance #2 Alternative is smaller than under the IVS project, the potential for impacts to paleontological resources under the Drainage Avoidance #2 Alternative would be the same as those described for the IVS project due to the presence of geological units with moderate to high paleontological sensitivity on the site. Measures PAL-1 through PAL-7 are intended to ensure that the paleontological resource impacts during construction of Drainage Avoidance #2 Alternative would not be adverse.

No impacts to paleontological resources are anticipated during the operation of Drainage Avoidance #2 Alternative.

The short- and long-term impacts of the four applicant-proposed modifications related to paleontological resources would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.5.4.9 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant or amend the *California Desert Conservation Area Plan* (CDCA Plan), and existing conditions on the site would continue into the future. Therefore, there will be no project-related impacts to cultural and paleontological resources under this No Action Alternative.

4.5.4.10 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to prohibit solar on the site in the future. Existing conditions on the site would continue into the future under this No Action Alternative. Therefore, there will be no project-related impacts to cultural and paleontological resources under this alternative.

4.5.4.11 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to allow other solar on the site in the future. Therefore, the site could be developed by other solar projects in the future, which would be expected to result in impacts to cultural and paleontological resources that would be similar to those expected from the IVS project.

4.5.5 Cumulative Impacts

4.5.5.1 Cumulative Impacts Under the National Environmental Policy Act

Under NEPA, a cumulative impact 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Section 1508.7). Cumulatively significant

impacts are taken into consideration as an aspect of the intensity of a significant effect (40 CFR Section 1508.27(b)(7).

4.5.5.2 Cumulative Effects Under Section 106

The Section 106 regulation makes explicit reference to cumulative effects only in the context of a discussion of the criteria of adverse effect (36 CFR Section 800.5(a)(1)). Cumulative effects related to cultural resources are largely undifferentiated under Section 106 as an aspect of the potential effects of an undertaking. Such effects are enumerated and resolved in conjunction with the consideration of direct and indirect effects.

Cumulative Projects

The cumulative projects and study area considered in this analysis for cultural resources were described in detail earlier in Section 2.10, Overview of the Cumulative Impacts Analysis. As described in that section, the overall geographic area considered for cumulative impacts is the Plaster City area.

In general, cultural and paleontological resources in the geographic area have been significantly impacted by past and currently approved projects and may be significantly impacted by reasonably foreseeable projects as follows:

(1) Because cultural and paleontological resources are nonrenewable, the removal or destruction of any resource results in a significant net loss of resources.

(2) Existing development in the Plaster City area and the surrounding areas has resulted in, and future development is likely to result in, the removal or destruction of cultural and paleontological resources, which has resulted in a significant net loss of resources in these areas.

4.5.5.3 IVS Project: 750 MW Alternative

Construction Impacts

The construction of the IVS project is expected to result in permanent adverse impacts related to the removal and/or destruction of cultural and paleontological resources on the project site during ground disturbance and other construction activities. It is also expected that the construction of some or all of the foreseeable cumulative projects that are not yet built may also

result in permanent adverse impacts as a result of the removal and/or destruction of cultural and paleontological resources on the sites for those projects. As a result, the construction of the IVS project and other foreseeable cumulative projects will contribute to permanent long-term adverse impacts as a result of the removal and/or destruction of resources on those sites and an overall net reduction in cultural and paleontological resources in the area.

Operation Impacts

During operation of the IVS project, cultural and paleontological resources on and in the immediate vicinity of the project site may experience increased vandalism as a result of improved access to the site, illegal collection of artifacts/fossils, and/or destruction of resources by vehicles traveling on the site. Similar impacts may also occur as a result of some or all of the cumulative projects as more people come into this area who are associated with those new land uses. As a result, in the long term, the IVS project and other cumulative projects may contribute to a cumulative adverse impact on cultural and paleontological resources as a result of increased access to the area and the potential for increased vandalism, illegal collection of artifacts, and/or destruction of resources during operation-related activities.

Decommissioning

The decommissioning of the IVS project may result in adverse impacts to cultural and paleontological resources as a result of ground disturbance, increased vandalism, illegal collection of artifacts/fossils, and/or destruction of resources by vehicles traveling on the site or during demolition and removal of the project facilities. Similar impacts are not anticipated as a result of most of the other cumulative projects because the removal of those land uses may not result in increased vandalism, illegal collection of artifacts/fossils, and/or destruction of resources by vehicles traveling on those sites or during demolition and removal of those land uses. As a result, decommissioning the IVS project is not anticipated to contribute to a cumulative adverse impact on cultural and paleontological resources beyond the contribution that would occur as a result of the construction and operation of the IVS project.

4.5.5.4 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative would contribute to impacts to cultural and paleontological resources during construction, operations, and decommissioning similar to the IVS project, except that slightly less land on the project site would be disturbed under the Agency Preferred Alternative than under the IVS project, as described above.

4.5.5.5 300 MW Alternative

The 300 MW Alternative would contribute to impacts to cultural and paleontological resources during construction, operations, and decommissioning similar to the IVS project, except that less land on the project site would be disturbed under the 300 MW Alternative than under the IVS project.

4.5.5.6 Drainage Avoidance #1 Alternative

The Drainage Avoidance #1 Alternative would contribute to impacts to cultural and paleontological resources during construction, operations, and decommissioning similar to the IVS project, except that less land on the project site would be disturbed under the Drainage Avoidance #1 Alternative than under the IVS project.

4.5.5.7 Drainage Avoidance #2 Alternative

The Drainage Avoidance #2 Alternative would contribute to impacts to cultural and paleontological resources during construction, operations, and decommissioning similar to the IVS project, except that less land on the project site would be disturbed under the Drainage Avoidance #2 Alternative than under the IVS project.

4.5.5.8 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Because this No Action Alternative would not result in impacts to cultural and paleontological resources, it would not contribute to cumulative adverse impacts to those types of resources.

4.5.5.9 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Because this No Action Alternative would not result in impacts to cultural and paleontological resources, it would not contribute to cumulative adverse impacts to those types of resources.

4.5.5.10 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Because this No Action Alternative could result in impacts to cultural and paleontological resources similar to the IVS project and the Agency Preferred Alternative, it could contribute to cumulative adverse impacts to the types of resources similar to those Alternatives.

4.5.6 Mitigation, Project Design Features, and Other Measures

4.5.6.1 Resolving Significant Effects

Mitigation under NEPA includes proposals that avoid or minimize any potential significant effects of a proposed or alternative action on the quality of the human environment (40 CFR Section 1502.1, 1505.2(c)). The definition of mitigation in the NEPA regulation includes the development of measures that would avoid, minimize, or rectify significant effects, progressively reduce or eliminate such effects over time, or provide compensation for such effects (40 CFR Section 1508.20).

The Section 106 process directs the resolution of adverse effects through the development of proposals to avoid, minimize, or otherwise mitigate such effects (36 CFR Section 800.6(a)).

4.5.6.2 Programmatic Agreement

In accordance with 36 CFR Part 800.14(b), Programmatic Agreement (PA) documents are used for the resolution of adverse effects for complex project situations and when effects on historic properties (resources eligible for or listed in the National Register) cannot be fully determined prior to approval of an undertaking. The BLM is preparing a PA in consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), the Corps, the California Energy Commission (CEC), other Consulting Parties, and interested Native American tribes (including Tribal governments as part of government-to-government consultation). The PA will govern the continued identification and evaluation of historic properties (eligible for the National Register) as well as the resolution of any effects that may result from this proposed undertaking should the project be permitted. Historic properties are significant prehistoric and historic cultural resources as determined by the BLM in application of the National Register criteria per 36 CFR Part 60.4.

As a result of the anticipated impacts of the IVS project on cultural resources and the large geographic area in the APE, a PA with the ACHP, Corps, CEC, SHPO, other Consulting Parties,

and interested Native American tribes (government-to-government consultation) is necessary. The contacts with Indian Tribes and Tribal organizations as part of the government-to-government consultation for the IVS project are summarized in Appendix F, Government-to-Government Consultation.

Treatment plans regarding historic properties and historical resources that cannot be avoided by project construction will be developed in consultation with the Corps, CEC, SHPO, other Consulting Parties, and interested Native American tribes (government-to-government consultation) as stipulated in the PA. When the PA is fully executed, the IVS project will have fulfilled the requirements of the NHPA.

The BLM initiated formal consultation with the ACHP and the SHPO on the development of a PA for the IVS project on August 25, 2009. The ACHP replied on September 22, 2009, that they would participate in consultation on the project. Due to the presence in the APE of jurisdictional waters as defined by Section 404 of the Clean Water Act, the Corps was also invited into consultation on the development of the PA in that they may use it to comply with Section 106 of the NHPA for actions they may take regarding the project. The Corps and NPS have agreed to participate and will participate as a Signatory and Concurring Party, respectively. Other formal Consulting Parties to the PA at this time include the NPS, National Trust for Historic Preservation, the Anza Society, the California Unions for Reliable Energy, and the Sacred Sites International Foundation, as organizations, and Edie Harmon and Greg Smestad, Ph.D., as individuals. The BLM has been informally consulting with many individuals and organizations on this project.

The following Native American tribes or tribal organizations have also been invited to be Consulting Parties to the PA:

- Campo Kumeyaay Nation
- Cocopah Indian Tribe
- Quechan Indian Tribe
- Ewiiaapaayp Band of Kumeyaay Indians
- Jamul Indian Village
- Kwaaymii Laguna Band of Indians
- La Posta Band of Kumeyaay Indians

- Manzanita Band of Kumeyaay Indians
- San Pasqual Band of Diegueño Indians
- Santa Ysabel Band of Diegueño Indians
- Ah-Mut Pipa Foundation

Additional tribes may become consulting parties at any time there is a request to participate.

A Draft PA is currently in development and has been sent out to the Consulting Parties for their review and comment. The Draft PA is included as Appendix G, Draft Programmatic Agreement, in this FEIS. The ROD will include the executed PA.

Implementation of Measures CUP-1 through CUP-11, subject to the consultation process for the development of the Programmatic Agreement, would reduce or resolve adverse effects due to project construction for the Agency Preferred Alternative, the IVS project, the 300 MW Alternative, the Drainage Avoidance #1 Alternative, and the Drainage Avoidance #2 Alternative. These measures would reduce impacts through avoidance, evaluation, and treatment as presented in the mitigation measures below. It should be noted that archaeological testing for National Register of Historic Places (National Register)/California Register of Historical Resources (California Register) eligibility evaluation is destructive. Resource avoidance is always preferred where possible.

Specific treatments to resolve effects that are developed by the consulting parties to the PA would be stipulated in the HPTP that would tier from the PA. Because specific treatments are being developed and consultation with all interested parties is ongoing, there is no absolute commitment to specific treatment measures until they are finalized.

CUP-1 **Identify and evaluate cultural resources in final Area of Potential Effects (APE).** The Applicant shall provide sufficient technical data to enable the United States Bureau of Land Management (BLM) to properly evaluate the significance of all potentially affected cultural resources. Cultural resources data collection shall be conducted by professionals meeting the Secretary's Standards and in accordance with those Standards, to provide recommendations with regard to their eligibility for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), or local registers. Preliminary determinations of National Register eligibility will be made by the BLM, in consultation with the California Energy Commission (CEC) and other appropriate consulting parties, Native American tribes, and the State Historic Preservation Officer (SHPO).

CUP-2 **Avoid and protect potentially significant resources.** Where feasible, potentially register-eligible resources and register-eligible resources shall be protected from direct project impacts by project redesign. Complete avoidance of impacts to such resources shall be the preferred protection strategy. Avoidance of direct physical effects is the preferred treatment measure for historic properties to which Native American tribes attach sacred or religious significance, or for properties that have cultural significance as a traditional cultural property. The BLM would achieve this preferred treatment by conditioning the right-of-way (ROW) grant to exclude those historic properties, or lands from the project. On the basis of preliminary National Register eligibility assessments or previous determinations of resource eligibility, the BLM and CEC, in consultation with the SHPO, may request the relocation of the project area where relocation would avoid or reduce damage to cultural resource values.

Where the BLM and CEC, in consultation with the Applicant, decide that potentially National Register-eligible and/or California Register-eligible cultural resources cannot be protected from direct impacts by project redesign, or that avoidance is not feasible, the Applicant shall undertake additional studies needed by the BLM to evaluate the resources' National Register and/or California Register eligibility and to recommend further mitigative treatment. The nature and extent of this evaluation shall be determined by the BLM in consultation with the consulting parties and shall be based upon final project engineering specifications. Evaluations will be based on surface remains, subsurface testing, archival and ethnographic resources, and in the framework of the historic context and important research questions of the project area. Results of those evaluation studies and recommendations for mitigation of project effects shall be incorporated into a Historic Properties Treatment Plan (HPTP).

All potentially National Register-eligible and/or California Register-eligible resources that will not be affected by direct impacts, but are within 100 feet of direct impact areas, will be designated as Environmentally Sensitive Areas (ESAs) to ensure that construction activities do not encroach onsite peripheries. Protective fencing, or other markers (after approval by CEC/BLM), shall be erected and maintained to protect ESAs from inadvertent trespass for the duration of construction in the vicinity. ESAs shall not be identified specifically as cultural resources. A monitoring program shall be developed as part of a HPTP and implemented by the Applicant to ensure the effectiveness of ESA protection.

CUP-3 **Develop and implement HPTPs.** Upon approval of the inventory report and the National Register and California Register eligibility evaluations, the Applicant

shall prepare and submit for approval an HPTP for register-eligible cultural resources to avoid or mitigate identified potential impacts. Treatment of cultural resources shall follow the procedures established by the Advisory Council on Historic Preservation for compliance with Section 106 of the National Historic Preservation Act and other appropriate State and local regulations, as explained in Stipulation IV of the Draft Programmatic Agreement. Avoidance, recordation, and data recovery will be used as mitigation alternatives. Avoidance and protection shall be the preferred strategy. The HPTP shall be submitted to the BLM for review and approval. As part of the HPTP, the Applicant shall prepare a research design and a scope of work for data recovery or additional treatment of National Register-eligible and/or California Register-eligible sites that cannot be avoided and to resolve effects.

The HPTP shall define and map all known National Register-eligible and/or California Eligible-eligible properties in or within 50 feet of all project APEs and shall identify the cultural values that contribute to their National Register and/or California Register eligibility. The HPTP shall also detail how National Register-eligible and/or California Register-eligible properties will be marked and protected as ESAs during construction. The HPTP shall also define any additional areas that are considered to be of high-sensitivity for discovery of buried register-eligible cultural resources, including burials, cremations, or sacred features. This sensitivity evaluation shall be conducted by an archaeologist who meets the Secretary's Standards and who takes into account geomorphic setting and surrounding distributions of archaeological deposits. The HPTP shall detail provisions for monitoring construction in these high-sensitivity areas. It shall also detail procedures for halting construction, making appropriate notifications to agencies, officials, and Native Americans, and assessing register-eligibility in the event that unknown cultural resources are discovered during construction. For all unanticipated cultural resource discoveries, the HPTP shall detail the methods, consultation procedures, and timelines for assessing register-eligibility, formulating a mitigation plan, and implementing treatment. Mitigation and treatment plans for unanticipated discoveries shall be approved by the BLM, CEC, and the SHPO prior to implementation.

The HPTP shall include provisions for analysis of data in a regional context, reporting of results within 1 year of completion of field studies, curation of artifacts (except from private land) and data (maps, field notes, archival materials, recordings, reports, photographs, and analysts' data) at a facility that is approved by BLM, and dissemination of reports to local and State repositories,

libraries, and interested professionals. The BLM will retain ownership of artifacts collected from BLM managed lands. The Applicant shall attempt to gain permission for artifacts from privately held land to be curated with the other project collections. The HPTP shall specify that archaeologists and other discipline specialists conducting the studies meet the Secretary's Standards (per 36 Code of Federal Regulations [CFR] 61).

CUP-4 **Conduct data recovery or other actions to resolve adverse effects.** If National Register-eligible and/or California Register-eligible resources, as determined by the BLM and SHPO, cannot be protected from direct impacts of the proposed project, data-recovery investigations or other mitigation shall be conducted by the Applicant to reduce adverse effects to the characteristics of each property that contribute to its National Register and/or California Register eligibility. For sites eligible under Criterion (d), significant data could be recovered through excavation and analysis. For properties eligible under Criteria (a), (b), or (c), mitigation may include but is not limited to historical documentation, photography, collection of oral histories, architectural or engineering documentation, preparation of a scholarly work, or some form of public awareness or interpretation. Data gathered during the evaluation phase studies and the research design element of the HPTP shall guide plans and data thresholds for data recovery; treatment will be based on the resource's research potential beyond that realized during resource recordation and evaluation studies. If data recovery is necessary, sampling for data-recovery excavations will follow standard statistical sampling methods, but sampling will be confined, as much as possible, to the direct impact area. Data-recovery methods, sample sizes, and procedures shall be detailed in the HPTP and implemented by the Applicant only after approval by the BLM. Construction work within 100 feet of cultural resources that require data-recovery fieldwork shall not begin until authorized by the BLM to ensure that impacts to known significant archaeological deposits are adequately resolved.

A description of alternative treatments to resolve adverse effects that are not data recovery may include (but are not limited to):

(1) Placement of construction in parts of historic properties that do not contribute to the qualities that make the resource eligible for the National Register;

(2) Deeding cemetery areas into open space in perpetuity and providing the necessary long-term protection measures;

(3) Public interpretation including the preparation of a public version of the cultural resources studies and/or education materials for local schools;

(4) Access by Native American tribes to traditional areas on the project site after the project has been constructed;

(5) Support by applicant to cultural centers in the preparation of interpretive displays; and

(6) Consideration of other off-site mitigation.

CUP-5 **Monitor construction at known ESAs.** The Applicant shall implement full-time archaeological monitoring by a professional archaeologist during ground-disturbing activities at all cultural resource ESAs. These locations and their protection boundaries shall be defined and mapped in the HPTP. 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, and under direct supervision of a principal archaeologist. The qualifications of the principal archaeologist and archaeological monitors shall be approved by the BLM.

A Native American monitor may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with Native American tribes. The monitoring plan in the HPTP shall indicate the locations where Native American monitors will be required. The Applicant shall retain and schedule any required Native American monitors.

Compliance with and effectiveness of any cultural resources monitoring required by an HPTP shall be documented by the Applicant in a monthly report to be submitted to the BLM for the duration of project construction. In the event that cultural resources are not properly protected by ESAs, all project work in the immediate vicinity shall be diverted to a buffer distance determined by the archaeological monitor until authorization to resume work has been granted by the BLM and CEC.

The Applicant shall notify the BLM of any damage to cultural resource ESAs. If such damage occurs, the Applicant shall consult with the BLM to mitigate damages and to increase effectiveness of ESAs. At the discretion of the BLM and CEC, such mitigation may include, but not be limited to, modification of protective measures, refinement of monitoring protocols, data-recovery investigations or payment of compensatory damages in the form of non-

destructive cultural resources studies or protection within or outside the license area, at the discretion of the BLM.

CUP-6 **Train construction personnel.** All construction personnel shall be trained regarding the recognition of possible buried cultural remains and protection of all cultural resources, including prehistoric and historic resources during construction, prior to the initiation of construction or ground-disturbing activities. The Applicant shall complete training for all construction personnel and retain documentation showing when training of personnel was completed. Training shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials, including Native American burials. Training shall inform all construction personnel that ESAs must be avoided and that travel and construction activity must be confined to designated roads and areas. All personnel shall be instructed that unauthorized collection or disturbance of artifacts or other cultural materials on or off the ROW by the Applicant, his representatives, or employees will not be allowed. Violators will be subject to prosecution under the appropriate State and federal laws and violations will be grounds for removal from the project. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction:

(1) All construction contracts shall require construction personnel to attend training so they are aware of the potential for inadvertently exposing buried archaeological deposits, their responsibility to avoid and protect all cultural resources, and the penalties for collection, vandalism, or inadvertent destruction of cultural resources.

(2) The Applicant shall provide training for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential ESA, and procedures and notifications required in the event of discoveries by project personnel or archaeological monitors. Supervisors shall also be briefed on the consequences of intentional or inadvertent damage to cultural resources. Supervisory personnel shall enforce restrictions on collection or disturbance of artifacts or other cultural resources.

CUP-7 **Properly treat human remains.** All locations of known Native American human remains shall be avoided through project design and shall be protected by designation as ESAs. The Applicant shall follow all State and federal laws, statutes, and regulations that govern the treatment of human remains (see Stipulation VI of the Draft Programmatic Agreement). The Applicant shall assist

and support the BLM in all required Section 106, government to-government and Native American Graves Protection and Repatriation Act (NAGPRA) consultations with Native Americans, agencies and commissions, and consulting parties as requested by the BLM. The Applicant shall comply with and implement all required actions and studies that result from such consultations. If human remains are discovered during construction, all work shall be diverted from the area of the discovery and the BLM authorized officer shall be informed immediately. Avoidance and protection of inadvertent discoveries which contain human remains shall be the preferred protection strategy with complete avoidance of impacts to such resources protected from direct project impacts by project redesign. The Applicant shall follow all State and federal laws, statutes, and regulations that govern the treatment of human remains. The Applicant shall comply with and implement all required actions and studies that result from such consultations, as directed by the BLM.

CUP-8 **Monitor construction in areas of high sensitivity for buried resources.** The Applicant shall implement archaeological monitoring by a professional archaeologist during subsurface construction disturbance at all locations identified in the HPTP as highly sensitive for buried prehistoric or historical archaeological sites or Native American human remains. These locations and their protection boundaries shall be defined and mapped in the HPTP. Intermittent monitoring may occur in areas of moderate archaeological sensitivity at the discretion of the BLM and CEC. Upon discovery of potential buried cultural materials by archaeologists or construction personnel, or damage to an ESA, work in the immediate area of the find shall be diverted and the BLM Authorized Officer or his/her designee shall be notified immediately. Once the find has been inspected and a preliminary assessment made, the Applicant's archaeologist will consult with the BLM, as appropriate, to make the necessary plans for evaluation and treatment of the find(s) or mitigation of adverse effects to ESAs, in accordance with the Secretary's Standards, and as specified in the HPTP.

CUP-9 **Continue consultation with Native American and other traditional groups.** The Applicant shall provide assistance to the BLM, as requested by the BLM, to continue required government to-government consultation with interested Native American tribes and individuals (Executive Memorandum of April 29, 1994 and Section 106 of the National Historic Preservation Act) and other traditional groups to assess or mitigate the impact of the approved project on traditional cultural properties or other resources of Native American concern, such as sacred sites and landscapes, or areas of traditional plant gathering for food,

medicine, basket weaving, or ceremonial uses. As directed by the BLM, the Applicant shall undertake required treatments, studies, or other actions that result from such consultation. Actions that are required during or after construction shall be defined, detailed, and scheduled in the HPTP and implemented by the Applicant.

CUP-10 **Protect and monitor National Register-eligible and/or California Register-eligible properties.** The Applicant shall design and implement a long-term management plan to protect National Register-eligible and/or California Register-eligible sites from direct impacts of project operation and maintenance and from indirect impacts (such as erosion and access) that could result from the presence of the project. The plan shall be developed in consultation with the BLM and other consulting parties to design measures that will be effective against project maintenance impacts, such as vegetation clearing and road and tower maintenance, and project-related vehicular impacts. The plan shall also include protective measures for National Register-eligible and/or California Register-eligible properties within the transmission line corridor or main project area that may experience operational and access impacts as a result of the project. Measures considered shall include restrictive fencing or gates, permanent access road closures, signage, stabilization of potential erosive areas, site capping, site patrols, and interpretive/educational programs, or other measures that will be effective for protecting National Register-eligible and/or California Register-eligible properties. The plan shall be property specific and shall include provisions for monitoring and reporting its effectiveness and for addressing inadequacies or failures that result in damage to National Register-eligible and/or California Register-eligible properties.

Monitoring of sites selected during consultation with BLM shall be conducted annually by a professional archaeologist for a minimum period of 5 years. Monitoring shall include inspection of all site loci and defined surface features, documented by photographs from fixed photo monitoring stations and written observations. A monitoring report shall be submitted to the BLM within 1 month following the annual resource monitoring. The report shall indicate any properties that have been affected by erosion or vehicle or maintenance impacts. For properties that have been impacted, the Applicant shall provide recommendations for mitigating impacts and for improving protective measures. After 5 years of resource monitoring, the BLM will evaluate the effectiveness of the protective measures and the monitoring program. Based on that evaluation, the BLM or CEC may require that the Applicant revise or refine the protective

measures, or alter the monitoring protocol or schedule. If the BLM does not authorize alteration of the monitoring protocol or schedule, those shall remain in effect for the duration of project operation.

If the annual monitoring program identifies adverse effects to National Register-eligible and/or California Register-eligible properties from operation or long-term presence of the project, or if, at any time, the Applicant, BLM or CEC become aware of such adverse effects, the Applicant shall notify the BLM immediately and implement additional protective measures, as directed by the BLM. At the discretion of the BLM such measures may include, but not be limited to, refinement of monitoring protocols, data-recovery investigations, or payment of compensatory damages in the form of nondestructive cultural resources studies or protection.

CUP-11 **Complete identification efforts for the Anza Trail and Coordinate Mitigation Efforts.** Mitigation measures developed for the Juan Bautista de Anza National Historic Trail (Anza Trail) and outlined in the Programmatic Agreement shall provide for additional investigations throughout the project site to try to define the location of the Anza Trail or whether any archaeological evidence remains. These methods include but are not limited to the use of imaging technology to try to identify a primary path for the Anza Trail. Where archaeological data recovery is used as a mitigation measure to resolve effects to historic properties, the investigations should provide special attention to identifying artifacts or faunal remains that may have been left behind by the Anza party. Coordination is also required with other mitigation measures for effects to the recreation trail and viewshed, which may include installation of interpretive displays at the project site or other known trail sites outside the project area, the development of visitor overlooks, and the creation of audio/driving interpretive materials.

4.5.6.3 Mitigation for Paleontological Resources

PAL-1 The project owner shall provide BLM's Authorized Officer and the Compliance Project Manager (CPM) with the resume and qualifications of its Paleontological Resources Supervisor (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain BLM's Authorized Officer and CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified Paleontological Resource Monitors

(PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to BLM's Authorized Officer and the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of BLM's Authorized Officer and the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by BLM's Authorized Officer and the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

(1) Institutional affiliations, appropriate credentials, and college degree;

(2) Ability to recognize and collect fossils in the field;

(3) Local geological and biostratigraphic expertise;

(4) Proficiency in identifying vertebrate and invertebrate fossils; and

(5) At least 3 years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. PRMs shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

PAL-2 The project owner shall provide to the PRS, BLM's Authorized Officer and the CPM, for approval, maps and drawings showing the footprint of the power plants, construction lay down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests

enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS, BLM's Authorized Officer and CPM. The site grading plan and plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale of 1 inch = 40 feet to 1 inch = 100 feet range. If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS, BLM's Authorized Officer and CPM.

If construction of the IVS project proceeds in phases, maps and drawings may be submitted prior to the start of each power plant. A letter identifying the proposed schedule of each project power plant shall be provided to the PRS, BLM's Authorized Officer and CPM. Before work commences on affected power plants, the project owner shall notify the PRS, BLM's Authorized Officer and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week, and until ground disturbance is completed.

PAL-3 If after review of the plans provided pursuant to PAL-2, the PRS determines that materials with moderate, high, or unknown paleontological sensitivity could be impacted, the project owner shall ensure that the PRS prepares, and the project owner submits to BLM's Authorized Officer and the CPM for review and approval, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by BLM's Authorized Officer and the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities, and may be modified with BLM's Authorized Officer and CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, BLM's Authorized Officer and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP 1995) and shall include, but not be limited, to the following:

(1) Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;

(2) Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the conditions of certification;

(3) A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

(4) An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;

(5) A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;

(6) A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;

(7) A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

(8) Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;

(9) Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation, and how they will be met, and the name and phone number of the contact person at the institution; and

(10) A copy of the paleontological conditions of certification.

PAL-4 If after review of the plans provided pursuant to PAL-2, the PRS determines that materials with moderate, high, or unknown paleontological sensitivity could be impacted then, prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly BLM Authorized Officer- and CPM-approved training for the following workers: project managers, construction supervisors, foremen and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving BLM Authorized Officer- and CPM-approved worker training. Worker training shall consist of an initial in-person PRS training during the project kick-off, for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to BLM's Authorized Officer and CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

(1) A discussion of applicable laws and penalties under the law;

(2) Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontological sensitivity;

(3) Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;

(4) Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;

(5) An informational brochure that identifies reporting procedures in the event of a discovery;

(6) A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and

(7) A sticker that shall be placed on hard hats indicating that environmental training has been completed.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of BLM's Authorized Officer and the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

(1) Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to BLM's Authorized Officer and the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to BLM's Authorized Officer and the CPM for review and approval.

(2) The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with BLM's Authorized Officer and the CPM at any time.

(3) The project owner shall ensure that the PRS notifies BLM's Authorized Officer and the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.

(4) For any significant paleontological resources encountered, either the project owner or the PRS shall notify BLM's Authorized Officer and the CPM within 24 hours, or Monday morning in the case of a weekend event where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontological resource monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by BLM's Authorized Officer and the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

4.5.7 Summary of Impacts

Table 4-39 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to cultural and paleontological resources.

Table 4-39 Summary of Cultural and Paleontological Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	**Cultural Resources** Adverse effect on historic properties. **Paleontological Resources** Adverse impacts during construction to formations with moderate to high sensitivity.	**Cultural Resources** • Identify and evaluate cultural resources in the final APE. • Avoid and protect potentially significant resources. • Develop and implement HPTPs. • Conduct data recovery or other actions to resolve adverse effects. • Monitor construction at known ESAs. • Train construction personnel. • Properly treat human remains. • Monitor construction in areas of high sensitivity for buried resources. • Continue consultation with Native American and other traditional groups. • Protect and monitor National Register-eligible and/or California Register-eligible properties. • Complete identification efforts for the Anza Trail and coordinate mitigation efforts. **Paleontological Resources** *PAL-1:* PRS for mitigation monitoring *PAL-2:* Project maps and construction scheduling information to the PRS. *PAL-3:* PRMMP.	Unavoidable adverse impacts after mitigation to cultural resources as a result of the loss of resources. No unavoidable adverse impacts after mitigation to paleontological resources.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		PAL-4: Worker training. *PAL-5:* Construction monitoring. *PAL-6:* Implementation of all components of the PRMMP. *PAL-7:* Paleontological Resources Report.	
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No effect on historic properties and paleontological resources.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No effect on historic properties and paleontological resources.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same impacts on historic resources and paleontological resources as the IVS project covering the entire site.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: APE = Area of Potential Effects; California Register = California Register of Historical Resources; CDCA Plan = California Desert Conservation Area Plan; ESA = Environmentally Sensitive Area; HPTP = Historic Properties Treatment Plan; IVS = Imperial Valley Solar; MW = megawatts; National Register = National Register of Historic Places; PRMMP = Paleontological Resources Monitoring and Mitigation Plan; PRS = Paleontological Resource Specialist; ROW = right-of-way.

The likelihood of avoiding impacts to all the resources eligible for the National Register for the Build Alternatives is very remote. Although those impacts can be substantially mitigated, not all impacts can be 100 percent mitigated. Therefore, the Agency Preferred Alternative and the other Build Alternatives will result in adverse Impacts to cultural resources after mitigation.

Locally, paleontological resources have been documented in Quaternary alluvium, colluvium, lakebed sediments, and in sedimentary units of the Palm Springs Formation, all of which underlie the IVS site in the near surface. Potential impacts to paleontological resources would be mitigated through worker training and monitoring by qualified paleontologists, as required by Measures PAL-1 through PAL-7. Based on implementation of those measures, no adverse impacts would occur to paleontological resources under the Agency Preferred Alternative, the IVS project, or the other Build Alternatives.

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4.6 Fire and Fuels Management

4.6.1 Methodology

The potential for fire risks on the IVS project site was assessed based on the physical components of the project and the potential for wildland fires on the site. Because the IVS project would increase activity on the site and provide new structures and activities on the site, potential impacts related to wildland fire risks were assessed based on:

(1) Increased potential for ignition sources on the IVS site as a result of greater activity on the site during construction, operation (including transmission lines, SunCatchers, and other components and features associated with solar power harnessing and electricity generation), and decommissioning.

(2) Increased fuels on the site for project construction and operation which could increase wildland fire risks on the site.

In addition, the on-site firefighting systems are evaluated, as well as the time needed for off-site local fire departments to respond to a fire emergency at the IVS project site.

4.6.2 Definition of Resource

Areas proposed for development have the potential for elevating the potential for fire. Therefore, the fire risk resources for development are defined as the structures and operations of the IVS project and the vegetation on the site itself which could be at risk for wildland fires.

A wildland fire is a noncontrolled fire in an area where vegetation is the primary source of fuel for the fire. For a wildland fire to occur two things must be present: adequate fuel and an ignition source. Fuel is defined as the means for a fire to burn. The native vegetation of the region consists of Sonoran creosote bush scrub, a low-growing desert land cover-type characteristic throughout the Sonoran Desert and typical of the Colorado Desert as a whole, characterized by sparse, low-growing scrub, often interspersed with Ocotillo cacti. This vegetation is the only existing fuel source on the IVS project site. Due to the aridity of the climate, the ability of additional vegetation based fuels to populate the IVS project site is extremely limited unless an additional water source is provided to support the growth of that vegetation.

4.6.3 Applicable Regulations, Plans, and Policies/Management Goals

Two types of resources could be at potential risk for fire and/or providing fuels for fires. One type is the new structures that would be constructed on the IVS project site. The other type is the nature of the operations with project structures and native vegetation proximity to each other. While both types are heavily regulated, the structural risk is addressed through the required compliance with applicable fire codes and regulations concerning structures. The second type is plan and monitoring based.

As discussed in Section 3.6, Fire and Fuels Management, there are numerous Federal, State and local laws, ordinances, regulations, and standards (LORS) relevant to fire management and control which were listed and described in Table 3-12. Those LORS are listed briefly below:

- Federal Wildland Fire Management Policy
- National Fire Plan (NFP) – Nonregulatory
- 2007 Edition of California Fire Code and all applicable National Fire Protection Association (NFPA) standards (24 California Code of Regulations [CCR] Part 9)
- California Health and Safety Code
- California Fire Plan (2000)
- California Public Utilities Commission General Order 95: Rules for Overhead Transmission Line Construction (2006)
- California Department of Forestry and Fire Protection (CAL FIRE)
- County of Imperial Codified Ordinances Section 820.0100

An additional requirement for the IVS project is for the development and implementation of a Fire Prevention Plan consistent with 8 CCR Section 3221 to specifically address operations fire prevention. The Fire Prevention Plan for the IVS project would include:

- Determine the general project-specific program requirements
- Determine and conduct a fire hazard inventory, including ignition sources and mitigation
- Develop good housekeeping practices and proper materials storage

- Establish employee alarms and/or communication system(s)
- Provide portable fire extinguishers at appropriate site locations
- Locate fixed firefighting equipment in suitable areas
- Specify fire control requirements and procedures
- Establish proper flammable and combustible liquid storage facilities
- Identify the location and use of flammable and combustible liquids
- Provide proper dispensing and determine disposal requirements for flammable liquids
- Establish and determine training and instruction requirements and programs; and
- Identify contacts for information on plan contents.

4.6.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.6.4.1 IVS Project: 750 MW Alternative

The solar power plant provided in the IVS project would present a unique work environment that includes a solar field in the high desert. As discussed earlier, the potential for additional fire fuel on the IVS project site would be changed by the introduction of a new source of water on the site. Specifically, the IVS project would require the use of water to wash the mirrors on the SunCatchers. The presence of the water and the additional shading provided by the SunCatchers could encourage the growth of additional vegetation on the site which could become fuel in the event of a structure fire or an ignition source in the vegetation. Therefore, the

areas under the solar arrays must be kept free from weeds; herbicides would be applied as necessary. To further reduce the wildland fire risk on the IVS project site, the project includes removal of all vegetation in the vicinity of the solar power towers, the substation, and administration areas, and during regular maintenance of the solar field. The access road along the perimeter fence line would also serve as a fire break.

During construction and operation of the IVS project there is the potential for small fires, major structural fires, and wild fires. Electrical sparks; the combustion of fuel oil, natural gas, hydraulic fluid, mineral oil, insulating fluid at the project power plant switchyard or flammable liquids; explosions; and overheated equipment may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely at the power plant or other project buildings. Fires and explosions of natural gas or other flammable gases or liquids are typically rare. Compliance with all LORS related to fire prevention and control would be adequate to ensure protection from all fire hazards associated with the IVS project.

The IVS project would rely on both onsite fire protection systems and local fire protection services. The onsite fire protection system would provide the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the El Centro Fire Department (EFD).

During construction, portable fire extinguishers would be located and maintained throughout the site. Fire prevention and related safety procedures and training would also be implemented.

The IVS project would meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended NFPA standards (including Standard 850, which addresses fire protection at electric generating plants), and all Cal-OSHA requirements. Fire suppression elements on the IVS project site would include both fixed and portable fire extinguishing systems.

The fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water would be stored in the 175,000-gallon demineralized water storage facility on the site. This water would be on site for two purposes: for use in washing the mirrors and for fire suppression. A diesel-run fire water pump would increase the water pressure to the level required to serve all fire fighting systems on the site. A number of protective measures included in the IVS project would help reduce the potential for harm to plant personnel and damage to facilities in the event of a fire. These include removal of all vegetation in the vicinity of the solar power towers, the substation, and the administration areas, and the access road along the perimeter fence lines serving as a fire break.

In addition to the fixed fire protection system, smoke detectors, flame detectors, high-temperature detectors, appropriate class of service portable extinguishers, and fire hydrants would be located throughout the site and the facility structures at code-approved intervals. These systems are standard requirements of the California Fire Code and NFPA and would supply adequate fire protection.

Measures WORKER SAFETY-1 and WORKER SAFETY-2 include the preparation and implementation of several plans to maximize fire protection and prevention and worker protection and safety.

The applicant-proposed modifications to the transmission line and the water line will not result in differences in impacts related to fire and fuels management compared to the IVS project as described above. This is because these proposed modifications would be designed and function the same as the transmission line and water line evaluated for the original IVS project.

The applicant-proposed modifications to the hydrogen storage system are similar to the on-site hydrogen storage evaluated for the original IVS project. As a result, this proposed modification is not anticipated to result in impacts related to fire and fuels management different than identified above for the original IVS project.

The applicant-proposed modification to use an alternative water supply for construction and initial operations would extract water from an existing off-site well and transport that water to the IVS project site by truck. The driveway and well area on the well site are relatively clear of vegetation and do not appear to be a major source of potential fuel. The trucks would travel on existing paved roads between the well site and the IVS project site. Therefore, the alternative water supply is not expected to result in impacts related to fire and fuels management different than those described above for the original IVS project.

4.6.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative and the IVS project would result in development on nearly the same amount and areas on the site, and nearly identical construction, operations, and decommissioning activities. The Agency Preferred Alternative would also include the same fire prevention and protection features as the IVS project. It would result in fire risks and impacts very similar to those described in the following section for the IVS project.

As described below for the IVS project, compliance with all LORS would be adequate to ensure protection from fire hazards associated with the Agency Preferred Alternative. The Agency Preferred Alternative also includes Measures WORKER SAFETY-1 and WORKER SAFETY-2.

The short- and long-term impacts of the four applicant-proposed modifications related to fire and fuels management would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.6.4.3 300 MW Alternative

The 300-Megawatt (MW) Alternative would have fire and fuel risks and impacts similar to those described above for the IVS project. However, because the 300 MW Alternative would be less acreage than the IVS project, a reduced area would be potentially subject to increases in native vegetation as a fuel source compared to the IVS project.

As described for the IVS project, compliance with all LORS would be adequate to ensure protection from fire hazards associated with the 300 MW Alternative. The Agency Preferred Alternative also includes Measures WORKER SAFETY-1 and WORKER SAFETY-2.

The short- and long-term impacts of the four applicant-proposed modifications related to fire and fuels management would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.6.4.4 Drainage Avoidance #1 Alternative

The Drainage Avoidance #1 Alternative would have similar impacts and measures as those described for the IVS project related to fire and fuel risks because it would cover nearly the same acreage on the site and would have nearly the same facilities and structures as the IVS project.

As described for the IVS project, compliance with all LORS would be adequate to ensure protection from fire hazards associated with the Drainage Avoidance #1 Alternative. This Alternative also includes Measures WORKER SAFETY-1 and WORKER SAFETY-2.

The short- and long-term impacts of the four applicant-proposed modifications related to fire and fuels management would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.6.4.5 Drainage Avoidance #2 Alternative

The Drainage Avoidance #2 Alternative would have similar impacts and measures as those described for the IVS project related to fire and fuel risks but at a reduced level because it would on a much smaller site and would have a reduced number of facilities and structures compared to the IVS project.

As described for the IVS project, compliance with all LORS would be adequate to ensure protection from fire hazards associated with the Drainage Avoidance #2 Alternative. The Drainage Avoidance #2 Alternative also includes Measures WORKER SAFETY-1 and WORKER SAFETY-2.

The short- and long-term impacts of the four applicant-proposed modifications related to fire and fuels management would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.6.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant and would not amend the *California Desert Conservation Area Plan* (CDCA Plan, 1980 as amended). As a result, no solar energy project would be constructed on the IVS site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no impacts related to fire and fuel risks associated with construction and operation of any of the solar project Build Alternatives would occur. However, the site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have impacts related to fire and fuel risks similar to the IVS project, in other locations.

4.6.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to make the site unavailable for future solar development. As a result, no solar

energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, this No Action Alternative would not result in impacts related to fire and fuel risks associated with construction and operation of a Build Alternative. However, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have impacts related to fire and fuel risks similar to the IVS project, in other locations.

4.6.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant but would amend the CDCA Plan to allow for other solar projects on the site. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts related to fire and fuel risks would result from the construction and operation of that solar technology and would likely be similar to the impacts related to fire and fuel risks under the IVS project. As such, this No Action Alternative could result in impacts related to fire and fuel risks similar to the impacts under the IVS project.

4.6.5 Cumulative Impacts

The cumulative impacts study area and cumulative projects considered in the cumulative impacts analysis for fire and fuels management are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives were reviewed to determine if they could contribute to a cumulative adverse impact on the fire and emergency service capabilities of the EFD. It was determined through review of the plans, application of the LORS, and the measures applicable to these Alternatives, that they would not contribute to cumulative adverse impacts to existing fire protection and prevention services because they would result in only a minor increase in demand for these services.

The potential risk of added fire fuels on the site is localized and would not contribute to a cumulative fire and fuels issue for the area because measures are included in the IVS project,

the Agency Preferred Alternative, and the other Build Alternatives to ensure that the growth of additional fuels on the project site is regularly checked and controlled.

4.6.6 Mitigation, Project Design Features, and Other Measures

WORKER SAFETY-1 The project owner shall submit to BLM's authorized officer and the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

- A Construction Personal Protective Equipment Program
- A Construction Exposure Monitoring Program
- A Construction Injury and Illness Prevention Program
- A Construction Emergency Action Plan
- A Construction Fire Prevention Plan

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to BLM's authorized officer and the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the El Centro Fire Department for review and comment prior to submittal to the BLM's authorized officer and CPM for approval.

WORKER SAFETY-2 The project owner shall submit to BLM's authorized officer and the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- An Operation Injury and Illness Prevention Plan
- An Emergency Action Plan
- Hazardous Materials Management Program

- Fire Prevention Program (8 CCR Section 3221)
- Personal Protective Equipment Program (8 CCR Sections 3401 3411)

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to BLM's authorized officer and the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Operation Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the El Centro Fire Department for review and comment.

4.6.7 Summary of Impacts

Table 4-40 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to fire and fuels management. As shown, based on compliance with the applicable LORS and Measures WORKER SAFETY-1 and WORKER SAFETY-2, the Agency Preferred Alternative, the IVS project, and the other Build Alternatives would not result in unavoidable adverse impacts related to fire and fuel risks.

Table 4-40 Summary of Fire and Fuels Management Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Potential for increases in fuel from vegetation; and fires during construction and operation.	WORKER-1: Project Construction Safety and Health Program WORKER-2: Project Operations Safety and Health Program	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Possibly similar to the Agency Preferred Alternative and the IVS project.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

4.7 Geology, Soils, Topography, Mineral Resources, and Seismic

4.7.1 Methodology

The potential effects of the Imperial Valley Solar (IVS) project on the geology, soils, topography, mineral resources, and seismic environment were assessed based on the following considerations:

- Located on or near the trace of a known active fault or an area characterized by surface rupture that might be related to a fault;
- Increase the potential for human injury or economic loss from earthquake, liquefaction, slope failure, or other geologic hazards;
- Damage or degrade an important geologic feature or landmark;
- Result in substantial soil erosion of loss of topsoil;
- Be located on unstable strata or soil that would become unstable as a result of the project, potentially resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or
- Be located on expansive soil creating substantial risk to life or property.

The potential risk of indirect impacts affecting geology and mineral resources from development of the IVS project uses a high-to-low scale. The following definitions of high, medium, and low were used in assessing the potential risk of indirect impacts from the proposed action:

- **High:** If there would be substantial impacts related to the criteria listed above
- **Medium:** If there would be moderate impacts related to the criteria listed above
- **Low:** If there would be minor or no impacts related to the criteria listed above.

4.7.2 Definition of Resource

Geology is the study of the earth, the materials of which it is made, the structure of those materials, and the processes acting on them. The California Desert Conservation Area (CDCA) is one of the most diverse geologic regions in the United States. As discussed in Section 3.7, Geology, Soils, Topography, Mineral Resources, and Seismic, the IVS project site is in the Colorado Desert physiographic province. The Colorado Desert physiographic province is a low-lying barren desert basin, as much as 245 feet (ft) below sea level, and is dominated by the Salton Sea. The province is a depressed block between active branches of alluvium-covered San Andreas Fault with the southern extension of the Mojave Desert on the east. It is characterized by the ancient beach lines and silt deposits of extinct Lake Cahuilla.

Resources within the greater CDCA include important mineral and energy resources such as geothermal, gas oil, uranium, and thorium. Forty-six mineral commodities plus geothermal resources and carbon dioxide are known to exist in the CDCA. As a result, the BLM makes land available for the development of Federal mining resources consistent with Section 2 of the Mining and Mineral Policy Act of 1970 and Section 102(a)(7), (8), and (12) of Federal Land Policy and Management Act of 1976 (FLPMA). In addition, consistent with those laws, the BLM makes certain that reclamation of disturbed lands takes place. The IVS project site is not in an designated Mineral Resource Zone (MRZ) and no economically viable mineral deposits are known to be present within the boundary of the IVS site.

4.7.3 Applicable Regulations, Plans, and Policies/Management Goals

The management goals of the *California Desert Conservation Area Plan* (CDCA Plan, 1980, as amended) Geology, Energy, and Mineral Resources Element are:

(1) Within the multiple-use management framework, assure the availability of known mineral resource lands for exploration and development

(2) Encourage the development of mineral resources in a manner which satisfies the national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation process.

(3) Develop a mineral resource inventory, geology-energy-minerals database, and professional, technical, and managerial staff knowledgeable in mineral exploration and development.

4.7.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.7.4.1 IVS Project: 750 MW Alternative

Ground Motion and Surface Fault Rupture

As with all of southern California, the IVS project site is subject to strong ground motion resulting from earthquakes on nearby faults. Ground shaking represents the main geological hazards at the site. Several faults in the vicinity of the IVS project site are capable of producing strong ground motion, including the Laguna Salada, Elsinore (Coyote Mountains), and San Jacinto (Superstition Mountain) faults. There is a known fault located within the project site and, therefore, there is also potential for impacts to the project site from ground motion and fault rupture. With the implementation of proper geotechnical engineering design, in accordance with Measures GEO-1 and GEO-2, the potential for adverse impacts associated with ground motion and fault rupture impacts should be minimal. Seismic testing will be conducted on the site to provide site-specific seismic data for incorporation in the final project design. This would ensure compliance with applicable LORS and would reduce any potential risk associated with seismic ground motion to a negligible level.

Liquefaction

The reported deep groundwater table (greater than 50 ft below ground surface [bgs]) below the IVS project site would indicate no potential for liquefaction at the site. Standard penetration testing (blowcounts) conducted for the project indicates strata beneath the site are also generally too dense to liquefy. Measure GEO-1 addresses the potential for liquefaction potential on the IVS site.

Local Subsidence

The project geotechnical investigation indicates the alluvial deposits underlying the site are generally at a medium-dense to very dense consistency and, therefore, are considered unlikely to support site-wide subsidence due to foundation loading. Due to relatively recent fissuring and subsidence along the trace of the Dixieland Fault a geologist or engineer experienced in recognition and examination of faults and fissures should be available during trenching performed during construction of the IVS project ancillary facilities, particularly the water supply pipeline, to document any potential near-surface soil anomalies and facilitate any necessary changes in design. With proper geotechnical engineering design, in accordance with Measures GEO-1 and GEO-2, the potential for localized foundation subsidence should be minimal.

Expansive Soil

The alluvium, colluvium, and lakebed deposits which form most of the site subsurface are not considered to be expansive. However, claystone members in the Palm Springs Formation may be expansive if exposed to moisture. An inspector experienced in recognition of clay rich soils should be onsite during excavation of building foundations to implement appropriate measures in areas of clay rich soils, if they are encountered. Proper routine, geotechnical mitigation of any expansive clay soils consistent with the requirements of Measure GEO-1 would provide adequate project performance and a minimal project impact related to expansive soil.

Mineral Resources

The IVS project site is not in a designated MRZ and no economically viable mineral deposits are known to be present within the site boundary. Therefore, the IVS project will not impact any designated MRZ or economically viable mineral deposits.

Laws, Ordinances, Regulations, and Standards

Federal, state, and local/county LORS applicable to this IVS project were detailed in Section 3.7. The IVS project would comply with all applicable LORS related to geology and mineral resources.

Applicant-Proposed Modifications

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in impacts related to geology, soils, topography, minerals, and seismic compared to the IVS project as described above. This is because these proposed

modifications would be designed, function, and be in the same locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in impacts related to geology, soils, topography, minerals, and seismic compared to the IVS project because this modification will not result in structures or activities which could be adversely impacted by or adversely impact geotechnical conditions in the area.

4.7.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alterative will result in effects related to geology, soils, topography, mineral resources, and the seismic environment and the applicable laws, ordinances, regulations, and standards (LORS) similar to the effects described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the geology and seismic effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project. The measures described in the following section to address adverse geology and seismic related impacts of the IVS project would also apply to the Agency Preferred Alternative.

The short- and long-term impacts of the four applicant-proposed modifications related to geology, soils, topography, minerals, and seismic would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.7.4.3 300 MW Alternative

The 300 MW Alternative would be on the same part of the IVS project site as Phase 1 of the IVS project. It would consist of 12,000 SunCatchers with a net generating capacity of approximately 300 MW occupying approximately 2,600 ac of land. The conversion of those 2,600 ac of land to support the 300 MW Alternative would result in the same potential for impacts related to geology, topography, mineral resources, and the seismic environment as described above for the IVS project. GEO-1 and GEO-2 would be applicable to the 300 MW Alternative and would reduce the potential impacts of this alternative related to geological and mineral resources to less than substantial levels.

The short- and long-term impacts of the four applicant-proposed modifications related to geology, soils, topography, minerals, and seismic would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.7.4.4 Drainage Avoidance #1 Alternative

The Drainage Avoidance #1 Alternative would cover approximately the same part and amount of the site as the IVS project. The conversion of 4,690 ac of land to support the Drainage Avoidance #1 Alternative would result in the same potential for impacts related to geology, topography, mineral resources, and the seismic environment as described above for the IVS project. GEO-1 and GEO-2 would be applicable to the Drainage Avoidance #1 Alternative and would reduce the potential impacts of this alternative related to geological and mineral resources to less than substantial levels.

The short- and long-term impacts of the four applicant-proposed modifications related to geology, soils, topography, minerals, and seismic would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.7.4.5 Drainage Avoidance #2 Alternative

Drainage Avoidance #2 Alternative would cover less of the site than the IVS project. The conversion of 3,153 ac of land to support the Drainage Avoidance #2 Alternative would result in the same potential for impacts related to geology, topography, mineral resources, and the seismic environment as described above for the IVS project. GEO-1 and GEO-2 would be applicable to the Drainage Avoidance #2 Alternative and would reduce the potential impacts of this alternative related to geological and mineral resources to less than substantial levels.

The short- and long-term impacts of the four applicant-proposed modifications related to geology, soils, topography, minerals, and seismic would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.7.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the right-of-way (ROW) grant for the IVS project would not be approved by the BLM, and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the IVS site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the geology and seismic-related impacts of the IVS project would not occur, including the conversion of 6,500 ac of land from desert environment to energy production use.

The IVS project site would become available to other uses that are consistent with the CDCA Plan under this No Action Alternative. In addition, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would potentially result in impacts on geological and mineral resources in other locations similar to the IVS project.

4.7.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the ROW grant for the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to prohibit other solar projects on the site. As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the IVS site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the geology and seismic-related impacts of the IVS project would not occur at the IVS site, including the conversion of 6,500 ac of land from desert environment to energy production use.

The IVS project site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would potentially have impacts on geological and mineral resources in other locations similar to the IVS project.

4.7.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the ROW grant for the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the IVS project site available for future solar development. As a result, the IVS project would not proceed. However, the site would be available for other solar projects, which could result in impacts to geological and mineral impacts similar to the IVS project.

4.7.5 Cumulative Impacts

As described in Section 2.10, Overview of the Cumulative Impacts Analysis, the geographic area considered for cumulative impacts on geology is, essentially, the western half of the Colorado Desert geomorphic province of extreme south-central California, bordering Mexico. There are no geological hazards with potential cumulative effects in this study area, other than regional subsidence from groundwater withdrawal. Because groundwater withdrawal will not occur on the IVS project site, the IVS project would not contribute to a cumulative adverse impact related to regional subsidence as a result of groundwater withdrawal.

The IVS project, the Agency Preferred Alternative, and the other Build Alternatives include the use of private well water under an existing permit to extract that water. As a result, these alternatives will not withdraw more water than allowed under that existing permit and, therefore, will not contribute to a cumulative adverse impacts related to regional subsidence as a result of groundwater withdrawal.

4.7.6 Mitigation, Project Design Features, and Other Measures

GEO-1 The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the

above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Verification: Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the CPM a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO.

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

GEO-2 The project owner shall submit to the CBO for review and approval the following:

(1) Design of the proposed drainage structures and the grading plan;

(2) An erosion and sedimentation control plan;

(3) Related calculations and specifications, signed and stamped by the responsible civil engineer; and

(4) Soils, geotechnical, or foundation investigations reports required by the 2007 CBC.

Verification: At least 15 days (or project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

4.7.7 Summary of Impacts

Table 4-41 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to geology, soils, topography, mineral resources, and seismic. As shown, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will be able to comply with LORS applicable to geology, mineral resources, and the seismic environment. The design and construction of these alternatives should not be adversely affected by or adversely affect the geology, mineral resources, and the seismic environment.

Table 4-41 Summary of Geology, Soils, Topography, Mineral Resources, and Seismic Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Potential effects to project structures associated with seismic ground motion, liquefaction, local subsidence, and expansive soil. No impacts related to mineral resources and Mineral Resources Zones. No contribution to regional subsidence,	*GEO-1:* compliance with building codes and regulations. *GEO-2:* design of drainage structures, grading plan, erosion and sedimentation plan; and soils, geotechnical, or foundation plans.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts related associated with seismic ground motion, liquefaction, local subsidence, expansive soil, mineral resources. and Mineral Resources Zones.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts related associated with seismic ground motion, liquefaction, local subsidence, expansive soil, mineral resources. and Mineral Resources Zones.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Impacts potentially similar to the Agency Preferred Alternative and the IVS project	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

4.8 Grazing, and Wild Horses and Burros

4.8.1 Methodology

Environmental consequences would occur in the event that the Imperial Valley Solar (IVS) project would interfere with existing and/or potential grazing activities, or be inconsistent with the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended) policies or other laws, ordinances, regulations, and standards (LORS) related to grazing and wild horses and burros on lands under the jurisdiction of the United States Bureau of Land Management (BLM).

4.8.2 Definition of Resources

4.8.2.1 Grazing (Rangelands)

As discussed in Section 3.8, Grazing, and Wild Horses and Burros, the CDCA Plan identifies three types of potential grazing ranges: perennial, ephemeral, and ephemeral/perennial. There are none of these types of grazing lands and forage characteristics on the IVS project site.

4.8.2.2 Wild Horses and Burros

As discussed in Section 3.8, the BLM estimates that nearly 37,000 wild horses and burros roam on BLM-managed rangelands in 10 western states. No wild horses or burros are currently known to be using or traversing the IVS project site. Additionally, the IVS project site has not been known as an area that has been substantially used by wild horses or burros in the past.

4.8.3 Applicable Regulations, Plans, and Policies/Management Goals

4.8.3.1 Grazing (Rangelands)

As discussed in detail in Section 3.8, the following regulations and plans are applicable to the management of grazing lands and wild horses and burros by the BLM:

- Public Rangelands Improvement Act of 1978 (PRIA)
- CDCA Plan Livestock Grazing Element
- Taylor Grazing Act

4.8.3.2 Wild Horses and Burros

As discussed in detail in Section 3.8, the following regulations and plans are applicable to the management of wild horses and burros by the BLM:

- Wild Free-Roaming Horses and Burros Act of 1971
- CDCA Plan Wild Horse and Burro Element

4.8.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.8.4.1 IVS Project: 750 MW Alternative

Grazing (Rangelands)

As discussed in Section 3.8, there are no allotments of rangeland on, adjacent to, or in the immediate vicinity of the IVS project site. Therefore, no conversion of rangeland would occur as a result of the IVS project, and no rangeland would be adversely affected by construction or operation of the IVS project. The site does not possess the characteristics of the different range types identified in the CDCA Plan; therefore, the IVS project would not interfere with potential grazing allotments. The project site is not included within a Public Rangelands Improvement Act (PRIA) inventory for public rangeland; therefore, PRIA does not apply to the site.

The four applicant-proposed modifications are not on or in the immediate vicinity of any rangeland allotments, rangeland as designated in the CDCA Plan, or in a PRIA inventory for public rangeland. Therefore, these modifications will not result in impacts related to grazing lands.

Wild Horses and Burros

There are no designated HAs or HMAs on, adjacent to, or in the immediate vicinity of the IVS project site. The Chocolate-Mule Mountains HMA and the Picacho HA are the nearest to the project site, at approximately 58 mi east of the IVS project site. In addition, following construction, fencing around the site would keep any wild horses or burros outside the project site and away from the project facilities and structures. Therefore, the IVS project would not interfere with BLM management of any HMA or HA, or conflict with the management goals established in the CDCA Plan Wild Horse and Burro Element. Similarly, the IVS project does not pose any conflicts with the intent and goals of the Wild Free-Roaming Horses and Burros Act (1971) because the site is not identified as an area for the management, control and protection of wild horses and/or burros by the Federal government.

The four applicant-proposed modifications are not on or in the immediate vicinity of any designated HAs or HMAs, and would not conflict with BLM management of any HA or HMA, any goals in the CDCA Plan, or the Wild Free-Roaming Horses and Burros Act. Therefore, these modifications will not result in impacts related to wild horses and burros.

4.8.4.2 709 MW Alternative: Agency Preferred Alternative

Grazing (Rangelands)

As discussed in Section 3.8, there are no allotments of rangeland on, adjacent to, or in the immediate vicinity of the IVS project site. Therefore, no conversion of rangeland would occur as a result of the Agency Preferred Alternative, and no rangeland would be adversely affected by construction or operation of the Agency Preferred Alternative. The site does not possess the characteristics of the different range types identified in the CDCA Plan; therefore, the Agency Preferred Alternative project would not interfere with potential grazing allotments. The IVS project site is not included within a PRIA inventory for public rangeland; therefore, PRIA does not apply to the site.

Similar to the IVS project described above, the four applicant-proposed modifications will not result in adverse impacts to grazing resources. This is because there are no grazing land

resources on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

Wild Horses and Burros

There are no designated Herd Areas (HAs) or Herd Management Areas (HMAs) on, adjacent to, or in the immediate vicinity of the IVS project site. The Chocolate-Mule Mountains HMA and the Picacho HA are the nearest to the project site, at approximately 58 miles (mi) east of the site in Imperial County near the California-Arizona border. In addition, following construction, fencing around the site would keep any wild horses or burros outside the project site and away from the project facilities and structures. Therefore, the Agency Preferred Alternative would not interfere with BLM management of any HMA or HA, or conflict with the management goals established in the CDCA Plan Wild Horse and Burro Element. Similarly, the Agency Preferred Alternative does not pose any conflicts with the intent and goals of the Wild Free-Roaming Horses and Burros Act (1971) because the site is not identified as an area for the management, control and protection of wild horses and/or burros by the Federal government.

Similar to the IVS project described above, the four applicant-proposed modifications will not result in adverse impacts to wild horses and burros. This is because there are no wild horses or burros on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

4.8.4.3 300 MW Alternative

Grazing (Rangelands)

Similar to the IVS project, the 300-megawatt (MW) Alternative would be consistent with applicable Federal acts and policies as well as the management goals established within the CDCA Plan Grazing Element, and would not affect any designated grazing lands.

Similar to the IVS project described above, the four applicant-proposed modifications under the 300 MW Alternative will not result in adverse impacts to grazing resources. This is because there are no grazing land resources on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

Wild Horses and Burros

Similar to the IVS project, the 300 MW Alternative would be consistent with applicable Federal acts and policies as well as the management goals established in the CDCA Plan Wild Horse and Burro Element. In addition, there are no designated HMAs or HAs on, adjacent to, or in the immediate vicinity of the site for the 300 MW Alternative.

Similar to the IVS project described above, the four applicant-proposed modifications under the 300 MW Alternative will not result in adverse impacts to wild horses and burros. This is because there are no wild horses or burros on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

4.8.4.4 Drainage Avoidance #1 Alternative

Grazing (Rangelands)

Similar to the IVS project, Drainage Avoidance #1 Alternative would be consistent with applicable Federal acts and policies as well as the management goals established within the CDCA Plan Grazing Element, and would not affect any designated grazing lands.

Similar to the IVS project described above, the four applicant-proposed modifications under the Drainage Avoidance #1 Alternative will not result in adverse impacts to grazing resources. This is because there are no grazing land resources on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

Wild Horses and Burros

Similar to the IVS project, Drainage Avoidance #1 Alternative would be consistent with applicable Federal acts and policies as well as the management goals established in the CDCA Plan Wild Horse and Burro Element. In addition, there are no designated HMAs or HAs on, adjacent to, or in the immediate vicinity of the site for the Drainage Avoidance #1 Alternative.

Similar to the IVS project described above, the four applicant-proposed modifications under the Drainage Avoidance #1 Alternative will not result in adverse impacts to wild horses and burros. This is because there are no wild horses or burros on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

4.8.4.5 Drainage Avoidance #2 Alternative

Grazing (Rangelands)

Similar to the IVS project, Drainage Avoidance #2 Alternative would be consistent with applicable Federal acts and policies as well as the management goals established within the CDCA Plan Grazing Element, and would not affect any designated grazing lands.

Similar to the IVS project described above, the four applicant-proposed modifications under the Drainage Avoidance #2 Alternative will not result in adverse impacts to grazing resources. This is because there are no grazing land resources on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

Wild Horses and Burros

Similar to the IVS project, Drainage Avoidance #2 Alternative would be consistent with applicable Federal acts and policies, as well as the management goals established in the CDCA Plan Wild Horse and Burro Element. In addition, there are no designated HMAs or HAs on, adjacent to, or in the immediate vicinity of the site for the Drainage Avoidance #2 Alternative.

Similar to the IVS project described above, the four applicant-proposed modifications under the Drainage Avoidance #2 Alternative will not result in adverse impacts to wild horses and burros. This is because there are no wild horses or burros on or in the immediate vicinity of the IVS project site and the proposed modifications would result in construction and operation activities similar to the original IVS project relative to those four proposed modifications.

4.8.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the IVS project would not be approved by the BLM, and the BLM would not execute a right-of-way (ROW) agreement or amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing CDCA Plan's management goals and policies.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. The land on which the project is proposed would become available for other

uses, but not for solar energy generation. In addition, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet Federal and State mandates, and those projects could have similar or greater impacts than the IVS project related to grazing and wild horses and burros in other locations.

4.8.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the IVS project would not be approved by the BLM and the BLM would not execute a ROW grant for the IVS project. In addition, the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the CDCA Plan's management goals and policies.

Because the CDCA Plan would be amended to make the area unavailable for future solar development under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, and the conversion of 6,140 acres (ac) of BLM-managed land as a result of the IVS project would not occur. Off-highway vehicle (OHV) and recreational users would continue to be able to use the site as it currently exists. As a result, the use of the site is not expected to change noticeably from existing conditions under this No Action Alternative. However, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects may have similar or greater impacts than the IVS project related to grazing and wild horses and burros in other locations.

4.8.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the IVS project would not be approved by the BLM and the BLM would not execute a ROW grant for the IVS project. The BLM would amend the CDCA Plan to allow for other solar projects on the project site. As a result, it is possible that another solar energy project with the same or different technology could be constructed on the project site under this No Action Alternative. Different solar technologies require the use of different amounts of land; however, it is expected that all solar technologies would require the use of large amounts of the site. As a result, construction and operation of the solar technology would likely result in the conversion of 6,140 ac of land. As such, this No Action Alternative could result in the conversion of 6,140 ac of land similar to that under the proposed project.

4.8.5 Cumulative Impacts

Because the IVS project will not affect grazing lands, wild horses and burros, it will not contribute to cumulative impacts to these resources.

4.8.6 Mitigation, Project Design Features, and Other Measures

Because the IVS project would not result in impacts related to grazing, wild horses, and burros, no mitigation measure is required.

4.8.7 Summary of Impacts

Table 4-42 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to grazing, wild horses, and burros. As shown, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in any unavoidable adverse impacts related to grazing, wild horses, and burros.

Table 4-42 Summary of Grazing, and Wild Horses and Burros Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	No impacts to grazing or rangelands, designated Herd Areas or Herd Management Areas, wild horses and burros, or conflicts with the CDCA Plan Wild Horse and Burro Element. No contribution to cumulative impacts related to wild horses and burros.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #2 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

4.9 Land Use and Corridor Analysis

4.9.1 Methodology

The Imperial Valley Solar (IVS) project site is within the California Desert Conservation Area Plan (CDCA Plan) Multiple-Use Class L (Limited Use). Table 1 (Multiple Use Class Guidelines) of the CDCA Plan states that "… electrical generation plants may be allowed …" within the Limited Use designation. Specifically, wind and solar electrical generating facilities "… may be allowed after NEPA requirements are met." It should be noted that electrical generating facilities using nuclear and/or fossil fuels are not allowed within the Limited Use Designation. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not already identified in the CDCA Plan be considered through the Plan Amendment process. The Plan Amendment is the first component of the IVS project action. The right-of-way (ROW) grant application for the IVS project, the second component of the proposed action, would be allowed only after the applicable National Environmental Policy Act (NEPA) requirements for the project are met and the CDCA Plan is amended.

In terms of land use, the following considerations were analyzed in determining the potential environmental consequences of the IVS project:

- The Plan Amendment process would be completed in compliance with the Federal Land Policy and Management Act (FLPMA), NEPA, and all other relevant Federal law, Executive Orders, and management policies of the BLM;
- The Plan Amendment process would include an Environmental Impact Statement (EIS) (i.e., this BLM EIS) to comply with NEPA standards;
- Where existing planning decisions are still valid, those decisions may remain unchanged and be incorporated into the new Plan Amendment;
- The Plan Amendment would recognize valid existing rights;
- Native American Tribal consultations would be conducted in accordance with policy, and Tribal concerns would be given due consideration. The Plan Amendment process would include the consideration of any impacts on Indian trust assets (refer to Section 7, Native American Consultation, Concerns, and Values);

- Consultation with the State Office of Historic Preservation (SHPO) would be conducted throughout the plan amendment process; and
- Consultation with the United States Fish and Wildlife Service (USFWS) would be conducted throughout the plan amendment process.

The CDCA Plan planning criteria (in Chapter 7 of the CDCA Plan) are the constraints and ground rules that guide and direct the development of the Plan Amendment. They ensure that the Plan Amendment is tailored to the identified issues and ensure that unnecessary data collection and analyses are avoided. They focus on the decisions to be made in the Plan Amendment, and will achieve the following:

> "Sites associated with power generation of transmission not identified in the Plan will be considered through the Plan Amendment process."

Because the IVS project facility is not currently identified in the CDCA Plan, an amendment to identify the IVS project in the Plan is one of the two project related actions for the BLM to consider. As specified in Chapter 7, Plan Amendment Process, there are three categories of Plan Amendments, including:

- **Category 1:** For proposed changes that will not result in significant environmental impact or analysis through an EIS;
- **Category 2:** For proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and
- **Category 3:** To accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the IVS project would require a Category 3 amendment.

As discussed in Chapter 7 in the CDCA Plan, the following determinations framed the methodology in considering amendments to the CDCA:

- Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.
- Determine if alternative locations within the CDCA are available which would meet the applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.

- Determine the environmental effects of granting and/or implementing the applicant's request.
- Consider the economic and social impacts of granting and/or implementing the applicant's request.
- Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from Federal, State, and local government agencies.
- Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

Further, the Decision Criteria to be used for approval or disapproval of the proposed amendment require that the following determinations be made by the BLM Desert District Manager:

- The proposed amendment is in accordance with applicable laws and regulations;
- The proposed amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

Finally, the Plan also defines the Decision Criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These Decision Criteria include:

- Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
- Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
- Provide alternative corridors to be considered during processing of applications;
- Avoid sensitive resources wherever possible;
- Conform to local plans whenever possible;
- Consider wilderness values and be consistent with final wilderness recommendations;

- Complete the delivery systems network;
- Consider ongoing projects for which decisions have been made; and
- Consider corridor networks which take into account power needs and alternative fuel resources.

4.9.2 Definition of Resource

The land use resource is defined by its designation as Limited Use:

> "Multiple-Use Class L (Limited Use) protects sensitive, natural, scenic, ecological, and cultural resources values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished."

The CDCA Plan states that "… electrical generation plants may be allowed …" within the Limited Use designation. Specifically, wind and solar electrical generating facilities "… may be allowed after NEPA requirements are met." It should be noted that electrical generating facilities using nuclear and/or fossil fuels are not allowed within the Limited Use designation.

4.9.3 Applicable Regulations, Plans and Policies/Management Goals

The project's relationship with the applicable laws, ordinances, regulations, and standards (LORS) is discussed in Table 4-43.

Table 4-43 Land Use Laws, Ordinances, Regulations, and Standards Compliance

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
Federal			
Federal Land Policy and Management Act, 1976 – 43 CFR 1600, Sec. 501. [43 U.S.C. 1761]	(a) The Secretary, with respect to the public lands … are authorized to grant, issue, or renew rights-of-way over, upon, under, or through such lands for: (4) systems for generation, transmission, and distribution of electric energy	YES	The FLPMA authorizes the issuance of a right-of-way grant for electrical generation facilities and transmission lines. In addition, based on staff's review of the Federal Power Act, the requirements would not be applicable to the IVS project as they are not related to renewable resources, and are otherwise related to administrative procedures. Therefore, the IVS project would be in compliance with this policy.
Bureau of Land Management – California Desert Conservation Area (CDCA) Plan (BLM 1980)	**Chapter 2 – Multiple-Use Classes** MULTIPLE-USE CLASS GUIDELINES MULTIPLE-USE CLASS L Limited Use **6. Electrical Generation Facilities** – Wind/solar may be allowed – Geothermal electric generation may be allowed. – Nuclear and fossil fuel are not allowed **7. Transmission Facilities.** New gas, electric, and water facilities and cables for interstate communication may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met. [#5,85]	YES (with BLM's project-specific CDCA Plan Amendment)	Approximately 6,140 acres of the IVS project site are administered by the BLM and are managed under multiple use Class L (Limited Use) categories in conformance with the CDCA Plan. The IVS project consists of an electrical generating facility, a transmission line, a waterline, and ancillary facilities. As such, development of the IVS project is an allowed use under the Multiple-Use Class Guidelines. The CDCA Plan, 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 the Plan be considered through the Plan Amendment process. Therefore, the BLM would undertake a project-specific CDCA Plan amendment along with

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
			the ROW grant for the IVS project. Upon BLM's amendment of the CDCA plan for the IVS project, the IVS project would be fully compliant with the CDCA Plan. This Environmental Impact Statement (EIS) acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.
	Addendum B: Interim Management Guidelines **Chapter III. Guidelines for Specific Activities** **Lands Actions – Disposal, Rights-of-Way, Access and Withdrawals** **2. Rights-of-Way:** Existing rights-of-way may be renewed if they are still being used for their authorized purpose. New rights-of-way may be approved only for temporary uses that satisfy the non-impairment criteria. **3. Right-of-Way Corridors:** Right-of-way corridors may be designated on lands under wilderness review.	YES	The non-impairment standard, directs that "until Congress has determined otherwise" the lands under review be managed so as not to impair their suitability as wilderness (CRS 2004). As the IVS project would not traverse an established Wilderness Area, the project would be in compliance with this guideline of the CDCA Plan.
Federal Wilderness Act, 16 U.S.C. § 1131-1136	(a) Establishment; Congressional declaration of policy; wilderness areas; administration for public use and enjoyment, protection, preservation… provisions for designation as wilderness areas In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and	YES	The non-impairment standard directs that "… until Congress has determined otherwise …" the lands under review will be managed so as not to impair their suitability as Wilderness Areas. Because the IVS project would not traverse an established Wilderness Area and, therefore, would not impair a Wilderness Area, the project would be consistent

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
	modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.		with this guideline.
Yuha Desert Management Plan IV. Goals, Planned Actions, and Implementation	**G. Energy Development** **I. Utilities** **Goal:** Reduce impacts from electrical transmission lines and access roads. **1. Action:** Close most access roads to general public use (see Figures 11 and 14) and sign these closed.	YES	Approximately 7 miles of the proposed 10.3-mile transmission line would be constructed within the existing utility corridor of the Southwest Powerlink transmission line through the Yuha Desert ACEC. The remaining transmission line would be constructed within the boundaries of the IVS project site. Therefore, collocating the proposed transmission lines within, or adjacent to, existing utility corridors, would help minimize impacts. In addition, according to the applicant, all access to the IVS project site would be closed to the general public through controlled gates. Therefore, the IVS project would be consistent with the Yuha Desert Management Plan.

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

4.9.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives (including the two Land Use Plan Amendment Alternatives) are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.9.4.1 IVS Project: 750 MW Alternative

CDCA Amendment

The following is a response to each of the required determination, design criteria and decision criteria as listed in Section 4.9.1, Methodology, and Chapter 7 of the CDCA Plan.

Required Determinations

(1) Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.

(a) The applicant's request for a ROW was properly submitted, and this Final Environmental Impact Statement (FEIS) acts as the mechanism for evaluating and disclosing environmental impacts associated with that applications. No law or regulation prohibits granting the amendment.

(2) Determine if alternative locations within the CDCA are available which would meet the applicant's needs without requiring a change in the Plan's classification, or an amendment to any Plan element.

(a) The CDCA Plan does not currently identify any sites as solar generating facilities. Therefore, there is no other location within the CDCA which could serve as an alternative location without requiring a Plan Amendment. The IVS project does not require a change in the Multiple-Use Class classification for any area within the CDCA.

(3) Determine the environmental affects of granting and/or implementing the applicant's request.

(a) This FEIS acts as the mechanism for evaluating the environmental effects of approving the CDCA Plan Amendment and the ROW grant application.

(4) Consider the economic and social impacts of granting and/or implementing the applicant's request.

(a) This FEIS acts as the mechanism for evaluating the economic and social impacts of granting the ROW and the Plan Amendment.

(5) Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from Federal, State, and local government agencies.

(a) A Notice of Intent (NOI) to amend the CDCA Plan was published in the Federal Register October 17, 2008, Vol. 73, No. 202 Fed. Reg.61902 61903. The U.S. Environmental Protection Agency provided comments during the 30 day NOI scoping period. In accordance with the NOI, issues identified during the scoping period are placed in the comment categories below.

(6) Issues to be resolved in the plan amendment:

(a) Several comments were received with concerns over the loss of open space and recreational lands if the plan was amended to allow industrial use. These comments are being resolved by being considered within this FEIS.

(7) Issues to be resolved through policy or administrative action:

(a) All other comments received addressed specific environmental impacts and mitigation measures that each commenter requested be analyzed in the FEIS. These comments are being resolved by being considered within this FEIS.

(8) Issues beyond the scope of this plan amendment:

(a) No comments were received which were outside of the scope of this Plan Amendment.

(9) Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

(a) The balance between resource use and resource protection is evaluated within the FEIS. Title VI of the FLPMA, under CDCA, provides for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and maintenance of environmental quality. Multiple use includes the use of renewable energy resources, and through Title V of FLPMA, the BLM is authorized to grant rights-of-way for generation and transmission of electric energy. The acceptability of use of public lands within the CDCA for this purpose is recognized through the Plan's approval of solar generating facilities within Multiple-Use Class L. The purpose of the FEIS is to identify resources which may be adversely impacted by approval of the IVS project, evaluate alternative actions which may accomplish the purpose and need with a lesser degree of resource impacts, and identify mitigation measures and Best Management Practices (BMPs) which, when implemented, would reduce the extent and magnitude of the impacts and provide a greater degree of resource protection.

WECO-Designated Routes Alignment Adjustments

In addition to the determinations listed above for the CDCA amendment, the *Western Colorado Desert Routes of Travel Designations* (WECO) designated routes will also be affected by the IVS project, which would require closure of the routes on the IVS project site. As discussed in Chapter 2, 10 designated Open Routes traverse the IVS project site. There are three classifications for the off-highway vehicle (OHV) routes according to the CDCA Plan, "open," "closed," or "limited" for motor vehicle use. All the routes on the IVS site are classified as Open Routes. Open Routes are defined as follows:

> "Access on route by motorized vehicles is allowed. Special uses with potential for resource damage or significant conflict with other use may require specific authorization." (Route Designations, Motorized Vehicle Access, pp. 77, CDCA Plan, 1980 (as amended)).

The 10 Open Routes follow established dirt roads/trails on the site and are described briefly in Table 4-44.

All of the Open Routes on site will be closed to public access and redesignated as "Closed" as a result of the IVS project. These closures would affect the OHV recreational opportunities in the area. Because the IVS project would result in closure of OHV access routes on the IVS site, it would result in adverse impacts to existing and planned recreation opportunities on the IVS project site as envisioned in the CDCA Plan and the WECO amendment.

Table 4-44 Open Routes on the IVS Project Site

Route ID No.	Location
T670246	North/south from west of Plaster City quarry to intersect with T6700254 and then turns west to intersect with T670251
T670247	Parallel along San Diego Metropolitan Transit System rail track on northwest side of site then deviates south and returns to parallel track
T670248	Perimeter route for most of site connecting with T670247 and intersecting numerous routes
T670251	West side of site running northwest to south east connecting with T670247 and T670246
T670254	Small connector route on south side of site between T670246 and T670254
T670255	Follows diagonal across site from northwest to southeast under the Southwest Powerlink transmission line
T670256	Roughly parallel to T670255 connecting T670246 and T670248
T670260	Short route from middle of southern edge to northeast terminating local wash
T670345	Connector route on southeast side of site roughly paralleling transmission line connecting T670256 and T670248
T670350	On east boundary of site intersecting route T670248

Table Source: BLM Website for Western Colorado Desert Routes of Travel Designations (WECO), http://www.blm.gov/ca/news/pdfs/weco_2002/WECO%20Route%20List-Final_1201.pdf, Table of Open, Limited and Closed Routes

Conformance of ROW Application with Decision Criteria (BLM)

(1) Minimize the number of separate rights-of-way by using existing rights-of-way as a basis for planning corridors:

(a) The IVS project assists in minimizing the number of separate rights-of-way by being proposed largely within existing Corridor N. Electrical transmission associated with the IVS project will occur within these existing corridors.

(2) Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables:

(a) Placement of the IVS project within existing Corridor N maximizes the joint-use of this corridor for electrical transmission.

(3) Provide alternative corridors to be considered during processing of applications:

(a) This decision criterion is not applicable to the IVS project. Placement of the proposed facility adjacent to existing corridors does not require designation of alternative corridors to support the IVS project.

(4) Avoid sensitive resources wherever possible:

(a) The extent to which the IVS project has been located and designed to avoid sensitive resources is addressed throughout the FEIS. BLM and other Federal regulations that restrict the placement of proposed facilities, such as the presence of designated Wilderness Areas or Desert Wildlife Management Areas were considerations in the original siting process used by the applicant to identify potential project locations. The project location and configurations of the boundaries were modified in consideration of mineral resources. The alternatives analysis considered whether the purpose and need of the IVS project could be achieved in another location, but with a lesser effect on sensitive resources.

(5) Conform to local plans whenever possible:

(a) The extent to which the IVS project conforms to local plans is addressed within the Land Use section of the FEIS. The IVS project is in conformance with the Imperial County General Plan.

(6) Consider wilderness values and be consistent with final wilderness recommendations:

(a) The IVS project is not located within a designated Wilderness Area or Wilderness Study Area.

(7) Complete the delivery systems network:

(a) This decision criterion is not applicable to the IVS project.

(8) Consider ongoing projects for which decisions have been made:

(a) This decision criterion is not applicable to the IVS project. Approval of the IVS project would not affect any other projects for which decisions have been made.

(9) Consider corridor networks which take into account power needs and alternative fuel resources:

(a) This decision criterion is not applicable to the IVS project. The IVS project does not involve the consideration of an addition to or modification of the corridor network. However, it does use facilities located in Corridor N, which were designed with consideration of both power needs and locations of alternative fuel resources.

Analysis of the consistency of the IVS project with applicable Federal LORS is presented in Table 4-43. The IVS project would be consistent with applicable Federal land use LORS. With BLM's issuance of a project-specific CDCA Plan Amendment, the IVS project would fully comply with the Plan. Therefore, impacts associated with compliance with Federal land use LORS would not be significant.

Because solar power facilities are an allowable use of the land as it is classified in the CDCA Plan, the proposed action does not conflict with the Plan. However, Chapter 3, "Energy Production and Utility Corridors Element" of the Plan also requires that newly proposed power facilities that are not already identified in the Plan be considered through the Plan Amendment process. The proposed facility is not currently identified within the Plan, and therefore a Plan Amendment is required to include the facility as a recognized element within the Plan.

The Plan states that solar power facilities may be allowed within Limited Use areas after NEPA requirements are met. This EIS acts as the mechanism for complying with those NEPA requirements.

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA Plan lists a number of Category 3 amendments that have been approved since adoption of the Plan in 1980. An additional amendment is proposed to be added to this section of the Plan, and would read "Permission granted to construct solar energy facility (proposed IVS project)."

The utility and energy corridor(s) are intended to provide sufficient room for the siting of large scale, long distance transport of goods and services, such as electricity, natural gas, petroleum products, telecommunications, and water. Recently, this corridor was used in the siting of the Sunrise Powerlink, which will parallel the existing Southwest Powerlink transmission line.

Within the immediate vicinity of the IVS project site and in Utility Corridor CDCA N, 368 115-238, additional capacity is available for future and currently unproposed projects. The right-of-way availability in this area is in four main locations: the Evan Hewes Highway and San Diego & Arizona Railroad Company/Union Pacific Railroad transportation corridor; the I-8 transportation corridor; the Southwest Powerlink Corridor; and the area between Dunaway Road and the eastern project boundary.

Based on the above analysis, there are no competing uses currently proposed for the IVS project site. Joint use of CDCA N, 368 115-238 is adequate to accommodate the IVS project, ancillary facilities, and current authorized but, as yet, unbuilt and pending projects. As designed, the project is situated such that current and future uses can be accommodated within the designated corridor CDCA N, 368 115-238. The IVS project would not result in any conflicts or impacts on the corridors.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in impacts related to the CDCA Plan, the WECO-designated routes, conformance of the ROW application with the decision criteria, and the applicable land use LORS compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in impacts related to these land use parameters because this modification will not result in any changes in land use or impacts to any WECO corridors off the IVS project site.

4.9.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alterative would result in effects related to consistency with the CDCA Plan and the applicable LORS and adverse impacts on the Open Routes similar to those effects described in the following section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the land use effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project.

The impacts of the four applicant-proposed modifications related to land use parameters would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.9.4.3 300 MW Alternative

Similar to the IVS project, the 300 MW Alternative would be consistent with applicable Federal land use LORS as shown in Table 4-43. With BLM's issuance of a project-specific CDCA Plan Amendment, the 300 MW Alternative would fully comply with the CDCA Plan. Impacts to the Open Routes would be slightly less than the IVS project. Because there would be a smaller area of development associated with the 300 MW Alternative, fewer Open Routes would require closure.

The impacts of the four applicant-proposed modifications related to land use parameters would be the same under the 300 MW Alternative as described earlier for the IVS project because this

alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.9.4.4 Drainage Avoidance #1 Alternative

Analysis of the IVS project's consistency with applicable Federal, State, and local land use LORS is presented in Table 4-43, which would also apply to the Drainage Avoidance #1 Alternative. Similar to the IVS project, with BLM's issuance of a project-specific CDCA Plan Amendment, the Drainage Avoidance #1 Alternative would be consistent with applicable land use LORS. Impacts to the Open Routes would be similar to the IVS project.

The impacts of the four applicant-proposed modifications related to land use parameters would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.9.4.5 Drainage Avoidance #2 Alternative

Analysis of the IVS project's consistency with applicable Federal, State, and local land use LORS is presented in Table 4-43, which would also apply to the Drainage Avoidance #2 Alternative. Similar to the IVS project, with BLM's issuance of a project-specific CDCA Plan Amendment, the Drainage Avoidance #2 Alternative would be consistent with applicable Federal land use LORS. Impacts to the Open Routes would be similar to the IVS project.

The impacts of the four applicant-proposed modifications related to land use parameters would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.9.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the IVS project would not be approved by the BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the land use-related impacts of IVS project would not occur at the site, including the conversion of 6,140 acres of land and any resulting impacts to existing uses, including recreational uses. Additionally, a site-specific land use plan amendment would not be required. Under this No Action Alternative, the Open Routes would not require closure and all Open Routes would remain as they currently exist. However, the land on which the project is proposed would remain available for other uses that are consistent with BLM's land use plan, potentially including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed elsewhere to meet Federal mandates, and those projects would have similar impacts in other locations.

4.9.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this Land Use Plan Amendment Alternative – No Action Alternative, the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, and the conversion of 6,140 acres of land as a result of the IVS project would not occur. OHV users and recreationists would continue to be able to use the lands affected by the IVS project as is occurring under existing conditions. As a result, the use of the site is not expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in impacts from the conversion of 6,140 acres of land at the project site. Under this No Action Alternative, the Open Routes would not require closure and all Open Routes would remain as they currently exist. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

4.9.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this Land Use Plan Amendment Alternative – No Action Alternative, the IVS project would not be approved by the BLM and BLM would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site under this No Action Alternative.

Because the CDCA Plan would be amended under this No Action Alternative, it is possible that the site would be developed with the same or a different solar technology. Different solar technologies require the use of different amounts of land; however, it is expected that all solar technologies would require the use of large amount of the site. As a result, construction and operation of the solar technology would likely result in the conversion of 6,140 acres of land and would create impacts to existing land uses, including recreational users. As such, this No Action Alternative could result in the conversion of 6,140 acres of land similar to under the IVS project, and result in impacts similar to the IVS project. It is expected that impacts to the Open Routes would be similar to the IVS project. The Open Routes on the IVS project site would require closure.

4.9.5 Cumulative Impacts

The cumulative impacts study area and cumulative projects considered in the cumulative impacts analysis for land use are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

Most of the cumulative projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to land use parameters less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects. Nonetheless, it is anticipated that the potential combined development of approximately 1 million acres of land in the southern California desert and the IVS project cumulatively would result in adverse effects on BLM lands and open lands that support recreational resources. Although the development of renewable resources in compliance with Federal and State mandates is important and required, the conversion of thousands of acres of open space (including areas with high soil quality and agricultural resources) would result in an unavoidable adverse impact. In general, the land conversion impacts to these lands would preclude numerous existing or other future land uses including recreation, wilderness,

rangeland, and open space, and would also result in an unavoidable adverse cumulative impact.

4.9.6 Mitigation, Project Design Features, and Other Measures

No mitigation, project design features, or other measures are required.

4.9.7 Summary of Impacts

Table 4-45 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to land use parameters.

As shown in Table 4-45, the following unavoidable adverse land use impacts would occur if the IVS project was implemented and would occur to a slightly lesser extent if the Agency Preferred Alternative or one of the other three Build Alternatives was implemented:

- The conversion of 6,500 acres of land to support the project components and activities would directly disrupt current recreational activities in established Federal, State, and local recreation areas and would result in adverse effects on recreational users of these lands.

- Because the IVS project would result in closure of OHV access routes on the IVS project site, it would result in adverse to recreation opportunities on the IVS site as envisioned in the CDCA Plan and the WECO amendment.

- Cumulative impacts to approximately 1 million acres of land in the southern California desert would all combine to result in adverse effects on recreational resources and would result in a significant and unavoidable impact. In consideration of cumulative land use compatibility impacts, the implementation of renewable projects in Southern California would occur mostly in undeveloped desert lands or areas of rural development, and therefore, would not create physical divisions of established residential communities. Nonetheless, approximately 1 million acres of land are proposed for solar and wind energy development in the southern California desert lands. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore, result in a significant cumulative impact.

Table 4-45 Summary of Land Use Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	The IVS project would impact planned land uses as designated in the CDCA Plan (1980 as amended) and designated Open Routes. The conversion of 6,500 ac of land would constrain the existing recreational uses on site and would result in adverse effects on recreational users of these lands. Approximately 1 million acres of land are proposed for solar and wind energy development in the Southern California desert lands. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore, result in an adverse cumulative impact.	*LAND-1:* Legal parcel creation through Subdivision Map Act Amendment of the CDCA Plan to allow this solar project on the site. Revision to the designated Open Routes on the project site.	The IVS project would result in unavoidable adverse impacts related to the conversion of 6,500 ac of land and recreational users of these lands; reduced OHV access routes and recreational opportunities on the site as envisioned in the CDCA Plan and the WECO amendment. The IVS project, with other solar and wind energy development in the Southern California desert, would contribute to a cumulative adverse impacts related to he conversion of those lands.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the Agency Preferred Alternative and the IVS project.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way; WECO = Western Colorado Desert Routes of Travel Designations.

4.10 Noise and Vibration

The purpose of this analysis is to identify and examine the likely noise and vibration impacts that could result from the construction and operation of the Imperial Valley Solar (IVS) project and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS) and to avoid substantial adverse noise or vibration impacts.

4.10.1 Methodology

A potential for a substantial noise impact exists where the noise of the project plus the background exceeds the background by 5 A-weighted decibels (dBA) or more at the nearest sensitive receptor. A change in level of at least 5 dBA is required before any noticeable change in community response would be expected.

It is considered reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting would not be substantial and an increase of more than 10 dBA would be substantial. An increase between 5 and 10 dBA should be considered adverse, but may be either substantial or not substantial, depending on the particular circumstances of the case.

Factors to be considered in determining if an adverse noise impact is substantial include:

- The resulting combined noise level;[1]
- The duration and frequency of the noise;
- The number of people affected;
- The land use designation of the affected receptor sites; and
- Public concern or controversy expressed at workshops or hearings or in correspondence.

[1] For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely not be substantial.

Noise impacts due to construction activities are usually not considered to be substantial if:

- The construction activity is temporary;
- Use of heavy equipment and noisy activities are limited to daytime hours; and
- All industry-standard noise abatement measures are implemented for noise-producing equipment.

Noise Appendix A in the SA/DEIS provides additional detailed discussion on the methodology for assessing potential noise and vibration impacts.

4.10.2 Definition of Resource

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

4.10.2.1 Compliance with Laws, Ordinances, Regulations, and Standards

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. To allow for the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances.

The noise impacts on the nearest sensitive receptors during construction of the IVS project were estimated. Assembly and installation of the Sun Catchers is expected to be performed in blocks around the site with additional, more substantial structural construction taking place at the Main Services Complex in the center of the site. The estimated noise resulting from construction of the collector block closest to the Painted Gorge receptor northwest of the IVS project site boundary would be no more than 66 dBA at that receptor. Similarly, noise resulting from the construction of the collector blocks closest to ML1 and ML5 would be no more than 62 dBA and 56 dBA at ML1 and ML5, respectively. A maximum construction noise level of 74 dBA L_{eq} is estimated to occur at a distance of 3,300 ft from the acoustic center of the construction activity (at the Main Services Complex) for all other project construction (such as roads and buildings) and attenuate to no more than 58 dBA L_{eq} at Painted Gorge, and 56 dBA L_{eq} at ML1and ML5. Overall construction noise would, therefore, be no more than 67 dBA at the Painted Gorge location, 63 dBA at location ML1, and 59 dBA at location ML5. A comparison of the construction

noise estimates at the identified receptors to measured ambient conditions is summarized in Table 4-46.

Table 4-46 Predicted Power Plant Construction Noise Impacts

Receptor	Highest Construction Noise Level (dBA L_{eq})	Measured Existing Ambient (dBA L_{eq})	Cumulative (dBA L_{eq})	Change (dBA)
ML1 – Southwest Residence	63	49 daytime	63 daytime	+14 daytime
ML5 – Northeast Residence	59	56 daytime	61 daytime	+5 daytime
Painted Gorge Residences	67	49 daytime	67 daytime	+18 daytime

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level.

The Imperial County General Plan Noise Element limits noise levels at residential receptors to no more than 75 dBA L_{eq}. The General Plan also limits noisy construction to daytime hours. Noisy construction work would be allowed only during the daytime hours of 7:00 a.m. to 7:00 p.m. on weekdays, 9:00 a.m. to 5:00 p.m. on Saturdays, and not at all on Sundays. To ensure that these hours are, in fact, enforced, Measure NOISE-6 is proposed. Compliance with NOISE-6 would insure that the noise impacts of the IVS project construction activities would comply with the local noise LORS.

Noise modeling was conducted to determine the operations related noise impacts of the IVS project on sensitive receptors. As seen in Table 4-47, the operational noise level of the IVS project at the nearest sensitive receptor would be no more than 52 dBA CNEL, which complies with the noise level limits specified in the Imperial County General Plan Noise Element.

Table 4-47 Plant Operating Noise Laws, Ordinances, Regulations, and Standards Compliance

Receptor	LORS	LORS Limit	Projected Noise Level (CNEL)
ML1	Imperial County General Plan Noise Element	60 dBA CNEL daytime	50 dBA
ML5	Imperial County General Plan Noise Element	60 dBA CNEL daytime	48 dBA
Painted Gorge	Imperial County General Plan Noise Element	60 dBA CNEL daytime	52 dBA

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: CNEL = Community Noise Equivalent Level; dBA = A-weighted decibels; LORS = laws, ordinances, regulations, and standards

4.10.3 Proposed Action and Alternatives: Direct and Indirect Impacts

Noise impacts associated with a project can be created by short-term construction activities and by normal long-term operation, such as the operation of a power plant. The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors combine to determine whether the facility would meet applicable noise control laws and ordinances and whether it would cause substantial adverse environmental impacts. In some cases, vibration may be produced as a result of power plant construction practices, such as blasting or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance.

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.10.3.1 IVS Project: 750 MW Alternative

Construction Impacts

Power Plant Site

To evaluate construction noise impacts, the projected noise levels were compared to the ambient noise levels. Because construction noise typically varies continually with time, it is most appropriately measured by, and compared to, the L_{eq} (energy average) metric.

The construction of the IVS project would take place in two phases over a period of 40 months, which is longer than the 12 to 16 month construction period of a traditional power plant. However, the construction of the IVS project would be conducted modularly, each module taking approximately 4 months to construct. Thus, maximum construction noise would occur during the construction of the module closest to the receptor for 4 months and would decrease as construction activity moved on to the next module, further from the receptor. Construction for the IVS project would still result in a temporary noise impact.

Aggregate construction noise may be expected to reach levels as high as 67 dBA L_{eq} at the nearest sensitive receptor, the residences at Painted Gorge Road, for a period of approximately 4 months; an increase of 18 dBA during daytime hours (see Table 4-48). Such an increase represents nearly a quadrupling of noise level at the receptor and would generally be considered a substantial adverse impact. The projected construction noise levels, however, are most likely conservative, calculated from manufacturers' estimated data and engine power sound generation formulae; actual noise levels may be less than predicted. Because the noisiest construction work would be restricted to daytime hours, it would be noticeable, but tolerable, at the nearest sensitive residential receptors. Because the maximum construction noise would be temporary and limited to daytime hours, the noise impacts due to construction activity are not substantial.

Table 4-48 Pile Driving Noise Impacts

Receptor	Pile Driving Noise Level (dBA L_{eq})	Daytime Ambient Noise Level (dBA L_{eq})	Cumulative Level (dBA)	Change (dBA)
ML1	64	49	64	+15
ML5	58	56	60	+4
Painted Gorge Road	68	49	68	+19

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: dBA = A-weighted decibels; L_{eq} = equivalent continuous sound level.

If the construction noise should annoy nearby residents, Measures NOISE-1 and NOISE-2 are proposed, which would establish a Notification Process to make nearby residents aware of the project, and a Noise Complaint Process that requires the applicant to resolve any problems caused by noise from the IVS project.

Linear Facilities

The water supply pipeline and transmission lines in the IVS project would extend outside the site boundary and would pass relatively close to two sensitive receptors, ML6 and ML9. While the construction noise levels for these linear features would be noticeable, construction on these features would proceed rapidly, so no particular area would be exposed to that construction noise for more than a few days.

Pile Driving

The potential noise impacts of pile driving were analyzed in the event pile driving is determined to be necessary during the construction of the IVS project. If pile driving is required, the noise

from this operation could be expected to reach 104 dBA at a distance of 50 ft from the pile driver. The noise level of the pile driving is projected to reach the Painted Gorge residences, the nearest residential receptor. Adding the construction noise effects to the existing daytime ambient level of 49 dBA L_{eq} would produce 68 dBA, an increase of 19 dBA over ambient noise levels as shown in Table 4-48. While this would produce a noticeable impact, limiting pile driving to daytime hours, in conjunction with its temporary nature, would result in impacts expected to be tolerable to residents. Measure NOISE-6 is proposed to ensure that pile driving noise, should it occur, would be limited to daytime hours.

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving, should it be employed. Vibration attenuates rapidly; it is likely that no vibration would be perceptible at any appreciable distance from the IVS project site. Therefore, there would be no substantial impacts from construction vibration.

Worker Effects

There are LORS that would specifically protect construction workers from noise impacts. To ensure that construction workers are adequately protected, Measure NOISE-3 is proposed.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in construction noise impacts compared to the IVS project as described above. This is because these proposed modifications would be constructed in essentially the same locations as these facilities were evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in construction noise impacts because this project feature does not require any construction activities.

Operation Impacts

The primary noise sources during operation of the IVS project would be the reciprocating Stirling Engines (including generator, cooling fan and air compressor) on the SunCatchers, the step-up transformers, and the new on-site substation. Power plant noise is unique. Essentially, a power plant operates as a steady, continuous, broadband noise source, unlike the intermittent sounds that comprise the majority of the noise environment. As such, power plant noise contributes to, and becomes part of, the background noise level, or the sound heard when most intermittent noises cease. Where power plant noise is audible, it will tend to define the background noise level.

In many cases, a power plant is intended to operate around the clock for much of the year. As a solar thermal generating facility, the IVS project would operate only during the daytime hours, typically 15 hours per day during the summer (with fewer hours during the fall, winter, and spring), when sufficient solar insulation is available.

The projected operations related noise of the IVS project was compared to the applicable LORS. In addition, any increase in noise levels at sensitive receptors was evaluated to identify any substantially adverse impacts.

Power Plant Site

Typically, daytime ambient noise consists of both intermittent and constant noises. The noise that stands out during this time is best represented by the average noise level, or L_{eq}. The daytime noise environment in the vicinity of the IVS project site consists of both intermittent and constant noises. The project's daytime operational noise levels were compared to the daytime ambient L_{eq} levels at the nearby noise-sensitive receptors. As seen in Table 4-49, power plant noise levels are predicted to be less than 52 dBA CNEL (45 dBA L_{eq}) at all sensitive receptors during daytime operation of the IVS project.

Table 4-49 Power Plant Noise Impacts at Nearest Sensitive Receptors

Location	Power Plant Noise Level (dBA L_{eq})	Ambient Noise Level (dBA L_{eq})	Cumulative Noise Level (dBA)	Change from Ambient Level (dBA)
ML1	43	49	50	+1
ML5	41	56	56	+0
Painted Gorge	45	49	50	+1

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: dBA = A-weighted decibels; dBA L_{eq} = equivalent continuous sound level.

When the projected plant noise level is added to the daytime ambient value, the noise level with the project is higher than the ambient value at the Painted Gorge residences and location ML1 by an inaudible amount as shown in Table 4-49 and the same as the ambient level at ML5. No change in ambient noise at any sensitive receptor at night would result from plant operation.

Tonal Noise

One possible source of disturbance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. To avoid the creation of annoying tonal (pure-tone) noises, the noise emissions of

various power plant features can be balanced during plant design. To ensure that tonal noises do not cause annoyance, Measure NOISE-4 is proposed.

Linear Facilities

Noise effects from the electrical interconnection line typically would not extend beyond the right-of-way easement of the line and would thus be inaudible to nearby sensitive receptors.

Vibration

Vibration from an operating power plant could be transmitted two ways: through the ground (ground-borne vibration) and through the air (airborne vibration).

The IVS project would consist of the solar dish generators, the operating components of each consisting of a relatively small reciprocating engine, cooling fans and air compressor. All these pieces of equipment must be carefully balanced to operate. Given the layout of the project features on the project site, any ground-borne vibration from the IVS project operations would likely be undetectable by any receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves and can rattle the walls of lightweight structures. None of the IVS project equipment is likely to produce low frequency noise. Therefore, it is highly unlikely that the IVS project operations would cause perceptible airborne vibration effects.

Worker Effects

Plant operating and maintenance workers must be protected from operations-related noise hazards as required by the applicable LORS. To ensure that plant operation and maintenance workers are adequately protected, Measure NOISE-5 is proposed.

The applicant proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in operations noise impacts compared to the IVS project as described above. This is because these proposed modifications would be operated in essentially the same locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in substantial operations noise because the individual truck trips would result in only minor increases in noise levels along the travel route from the well site to the IVS site. These minor increases would be temporary as each truck passes and would not be expected to be an adverse impact.

Facility Closure

In the future, on closure of the IVS project, all operational noise would cease, and no further adverse noise impacts from operation of the IVS project would occur. The remaining potential temporary noise source would be associated with the dismantling of the structures and equipment and any site restoration work that may be performed. Because this type of noise would be similar to that occurring during construction, it can be treated similarly. That is, noisy decommissioning work could be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise LORS that are in existence at that time would apply.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in noise impacts during decommissioning compared to the IVS project as described above. This is because these proposed modifications would be decommissioned and removed essentially the same as these facilities were evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in decommissioning noise impacts because when this water supply is no longer needed, the truck trips will cease and there will be no demolition associated with the termination of the use of the alternative water source.

4.10.3.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alterative would result in short- and long-term noise impacts very similar to the impacts described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the noise effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project. The measures described in the following section to address adverse short- and long-term noise impacts of the IVS project would also apply to the Agency Preferred Alternative.

The impacts of the four applicant-proposed modifications related to noise during construction, operations, and decommissioning would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

4.10.3.3 300 MW Alternative

Because the 300 MW Alternative would result in less construction generally at greater distances from sensitive receptors than the IVS project, it is expected that, like the IVS project, this alternative can be built and operated in compliance with all applicable noise and vibration LORS and the same measures described for the IVS project.

Given the distributive nature of the operational noise produced by the IVS project technology, the 300 MW Alternative would most likely correspond to lower operational noise impacts at noise receptors east of the project site. Operational noise impacts at the receptors west of the project site would likely be the same as for the IVS project. The noise impacts of the 300 MW Alternative would not be greater than the noise impacts from the IVS project, which, as discussed above, are not substantial.

The impacts of the four applicant-proposed modifications related to noise during construction, operations, and decommissioning would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

4.10.3.4 Drainage Avoidance #1 Alternative

Because the Drainage Avoidance #1 Alternative would result in less construction but at approximately the same distances from sensitive receptors as the IVS project, it is expected that, like the IVS project, this Alternative can be built and operated in compliance with all applicable noise and vibration LORS and the same Measures described for the IVS project.

Given the distributive nature of the operational noise produced by the IVS project technology, the Drainage Avoidance #1 Alternative would likely result in operational noise impacts at sensitive receptors similar to the noise levels under the IVS project because the project site boundaries would be the same for the IVS project and this Alternative. The noise impacts of the Drainage Avoidance #1 Alternative would not be greater than the noise impacts for the IVS project, which, as discussed above, are not substantial.

The impacts of the four applicant-proposed modifications related to noise during construction, operations, and decommissioning would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

4.10.3.5 Drainage Avoidance #2 Alternative

Because Drainage Avoidance #2 Alternative would result in less construction but at approximately the same distances from sensitive receptors as the IVS project, it is expected that, like the IVS project, this Alternative can be built and operated in compliance with all applicable noise and vibration LORS and the same Measures described for the IVS project.

Given the distributive nature of the operational noise produced by the IVS project technology, the Drainage Avoidance #2 Alternative would likely result in operational noise impacts at sensitive receptors similar to the noise levels under the IVS project because the project site boundaries would be the same for the IVS project and this Alternative. The noise impacts of the Drainage Avoidance #2 Alternative would not be greater than the noise impacts for the IVS project, which, as discussed above, are not substantial.

The impacts of the four applicant-proposed modifications related to noise during construction, operations, and decommissioning would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

4.10.3.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant and would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan (1980, as amended).

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the construction and operation noise-related impacts of the IVS project would not occur on or in the vicinity of the IVS project site. However, the IVS project site would become available to other uses that are consistent with BLM's land use plan. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations

4.10.3.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain with the existing ambient noise from its existing condition. Ambient noise of the site is not expected to change noticeably from existing conditions and, as such, this No Action Alternative would not result in impacts from any increase in noise at the project site. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

4.10.3.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. Different solar technologies use different machinery during construction and would create different ambient noise levels during operation; however, it is expected all technologies would require the use of large construction vehicles that would create unwanted noise during construction and some intermittent noise during operations. However, as with the IVS project, it is expected that solar technologies would result in only minor increases in ambient noises during operation. As such, this No Action Alternative could result in an impact from increased ambient noise during construction and operation similar to under the IVS project.

4.10.4 Cumulative Impacts

The geographic scope for considering cumulative noise impacts on sensitive receptors for this project consists of the region immediately surrounding those receptors identified in the project application. Any existing cumulative noise conditions are included in the existing ambient noise survey conducted at the sensitive receptors. There are no future foreseeable projects near

enough to IVS project site to contribute to cumulative adverse noise impacts. Projects further than the immediate vicinity of the IVS project site, whether renewable or otherwise, would be outside the geographic scope of the consideration of noise impacts of the IVS project and therefore would not contribute to cumulative noise impacts on or in the vicinity of the IVS project site.

4.10.5 Mitigation, Project Design Features, and Other Measures

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within 2 mi of the site, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE-2 **Noise Complaint Process:** Throughout the construction and operation of the IVS project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (provided at the end of this section), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;

- Take all feasible measures to reduce the noise at its source if the noise is project related; and

- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts, and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within 5 days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 3-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.

NOISE-4 **Noise Restrictions:** Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 24 hour community noise survey, utilizing the same monitoring sites employed in the pre-project ambient noise survey as a minimum. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. If the results from the survey indicate that the project noise levels are in excess of 45 dBA L_{eq} at the residence at 1510 Painted Gorge Road, additional measures shall be implemented to reduce noise to a level of compliance with this limit.

Verification: Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the report will be

a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

NOISE-5 Following the project's first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations Sections 5095–5099 and Title 29, Code of Federal Regulations Section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and Federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal/OSHA upon request.

NOISE-6 **Construction Time Restrictions:** Heavy equipment operation and noisy construction work relating to any project features shall be restricted to the times of day delineated below:

- Mondays through Fridays..... 7:00 a.m. to 7:00 p.m.
- Saturdays..... 9:00 a.m. to 5:00 p.m.
- Sundays and Holidays..... No Construction Allowed

Haul trucks and other engine-powered equipment shall be equipped with mufflers that meet all applicable regulations. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

4.10.6 Summary of Impacts

Table 4-50 summarizes the direct, indirect, short- and long term-, and cumulative adverse noise effects of the IVS project, the Agency Preferred Alternative, the other build alternatives, and the No Action Alternatives.

As shown in Table 4-50, the IVS project, if built and operated in conformance with the measures described above, would comply with all applicable noise and vibration LORS and would produce no substantial adverse noise impacts on people in the project area, directly, indirectly, or cumulatively.

Table 4-50 Summary of Noise Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Potential short-term adverse impacts during construction. Potential long-term increases in noise levels during operations.	*NOISE-1:* Notice of the initiation of construction and telephone contact information for complaints during construction and the first year of operation. *NOISE-2:* Implementation and documentation of the noise complaint process and the Noise Complaint Resolution Form during construction and operation. *NOISE-3:* Development and implementation of a noise control program during construction. *NOISE-4:* Community noise survey and implementation of measures to meet specific noise restrictions during operations. *NOISE-5:* Occupational noise survey and appropriate mitigation during operations. *NOISE-6:* Construction time restrictions.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the Agency Preferred Alternative and IVS project.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

NOISE COMPLAINT RESOLUTION FORM (MEASURE NOISE-2)

Imperial Valley Solar Project
(08-AFC-5)

NOISE COMPLAINT LOG NUMBER: _____

Complainant's Name and Address:

Phone Number: _____

Date Complaint Received: _____

Time Complaint Received: _____

Nature of Noise Complaint:

Definition of Problem after Investigation by Plant Personnel:

Date Complainant First Contacted: _____

Initial Noise Levels at 3 feet from Noise Source: _____ dBA Date: _____

Initial Noise Levels at Complainant's Property: _____ dBA Date: _____

Final Noise Levels at 3 feet from Noise Source: _____ dBA Date: _____

Final Noise Levels at Complainant's Property: _____ dBA Date: _____

Description of Corrective Measures Taken:

Complainant's Signature: _____ Date: _____

Approximate Installed Cost of Corrective Measures: $_____

Date Installation Completed: _____

Date First Letter Sent to Complainant: _____ (copy attached)

Date Final Letter Sent to Complainant: _____ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: _____

(Attach additional pages and supporting documentation, as required.)

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4.11 Public Health and Safety, and Hazardous Materials

4.11.1 Public Health and Safety

The purpose of this analysis is to determine if emissions of toxic air contaminants (TACs) from the Imperial Valley Solar (IVS) project would have the potential to cause substantial adverse public health and safety impacts or to violate standards for public health protection.

4.11.1.1 Methodology

The public health assessment discusses toxic emissions into the air to which the public could be exposed during construction, operation, and decommissioning of the IVS project. Following the release of TACs into the air, people may come into contact with them through inhalation, dermal contact, or ingestion via contaminated food or water.

Air pollutants for which no ambient air quality standards have been established are called noncriteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, noncriteria pollutants have no ambient (outdoor) air quality standards that specify levels considered safe for everyone.

Because noncriteria pollutants do not have such standards, a health risk assessment (HRA) is used to determine if people might be exposed to those types of pollutants at unhealthy levels. The HRA consists of the following steps:

- Identify the types and amounts of hazardous substances the IVS project could emit to the environment;
- Estimate worst-case concentrations of IVS project emissions in the environment using dispersion modeling;
- Estimate amounts of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact; and
- Characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Initially, a screening level risk assessment is performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that overestimates public health impacts from exposure to project emissions. In reality, it is likely that the actual risks from the IVS project would be much lower than the risks estimated by the screening level assessment. The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those conditions in the study. Such conditions include:

- Using the highest levels of pollutants that could be emitted from the IVS project;
- Assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- Using the type of air quality computer model which predicts the greatest plausible impacts;
- Calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- Assuming that an individual's exposure to cancer-causing agents occurs continuously for 70 years; and
- Using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

A screening level risk assessment would, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities may also emit certain substances that could present a health hazard from noninhalation pathways of exposure. When these substances are present in facility emissions, the screening level analysis includes the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk.

The risk assessment process for the IVS project addressed two categories of health impacts: chronic (long-term) noncancer effects, and cancer risk (also long-term). Because the only TAC emitted by the IVS project would be diesel particulate from emergency diesel-fueled engines, and because only long-term health effects have been established for diesel particulate, no acute (short-term) health effects are calculated for the IVS project.

Chronic health effects are those that arise as a result of long-term exposure to concentrations of airborne pollutants. The exposure period is considered to be approximately from 12 to 100 percent of a lifetime, or from 8 to 70 years. Chronic health effects include diseases such as reduced lung function and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called Reference Exposure Levels (RELs). These are amounts of toxic substances to which even sensitive people can be exposed and suffer no adverse health effects. These exposure levels are designed to protect the most sensitive individuals in the population, such as infants, the aged, and people suffering from illness or disease which makes them more sensitive to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effects reported in the medical and toxicological literature and include margins of safety. The margin of safety addresses uncertainties associated with inconclusive scientific and technical information available at the time of standard setting and is meant to provide a reasonable degree of protection against hazards that research has not yet identified. The margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, as well as to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Health protection is achieved if the estimated worst-case exposure is below the relevant reference exposure level. In such a case, an adequate margin of safety exists between the predicted exposure and the estimated threshold dose for toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with the California Air Pollution Control Officers Association (CAPCOA) guidelines, the HRA assumes the effects of each substance are additive for a given organ system. Other possible mechanisms due to multiple exposures include those cases where the actions may be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of substances, the HRA health could underestimate or overestimate the risks.

For carcinogenic substances, the HRA considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over a 70 year lifetime. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound number based on worst-case assumptions. Cancer risk is expressed in chances per million and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer (called potency factors and established by Office of Environmental Health Hazard Assessment [OEHHA]), and the length of the exposure period. Cancer risks for each carcinogen are added to yield total cancer risk. The conservative nature of the screening assumptions used means that actual cancer risks due to IVS project emissions are likely to be considerably lower than those estimated.

The screening analysis is performed to assess worst-case risks to public health associated with the IVS project. If the screening analysis predicts no adverse risks, then no further analysis is

required. However, if risks are above the adverse level, then further analysis, using more realistic site-specific assumptions, would be performed to obtain a more accurate assessment of potential public health risks. This methodology is also consistent with United States Environmental Protection Agency (EPA) risk assessment guidelines for public health assessments prepared pursuant to the National Environmental Policy Act (NEPA).

Chronic Noncancer Health Effects

The level of noncancer health effects was evaluated by calculating a hazard index. A hazard index is a ratio comparing exposure from facility emissions to the reference (safe) exposure level. A ratio of less than 1.0 signifies that the worst-case exposure is below the safe level. The hazard index for every toxic substance that has the same type of health effect is added to yield a Total Hazard Index. A Total Hazard Index of less than 1.0 indicates that cumulative worst-case exposures are less than the RELs. Under these conditions, health protection from the IVS project is likely to be achieved, even for sensitive members of the population. In such a case, it is presumed that there would be no substantial noncancer project-related public health impacts.

Cancer Risk

This analysis relied on regulations implementing the provisions of Proposition 65, the California Safe Drinking Water and Toxic Enforcement Act of 1986, (Health & Safety Code, Sections 25249.5 et seq.) for guidance to determine a cancer risk adverse level. Title 22, California Code of Regulations Section 12703(b) states that "…the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure." This level of risk is equivalent to a cancer risk of 10 in 1 million. An important distinction is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines adverse levels based on the total risk from all cancer-causing chemicals. Thus, the manner in which the adverse level is applied is more conservative (health-protective) than that applied by Proposition 65. The adverse risk level of 10 in 1 million is consistent with the level of significance adopted by many air pollution control districts (APCDs) in California. In general, these APCDs would not approve a project with a cancer risk exceeding 10 in 1 million.

4.11.1.2 Definition of Resource

Public health and safety is concerned with the health of populations in the vicinity of a project.

4.11.1.3 Applicable Regulations, Plans, and Policies/Management Goals

No potential adverse impacts for any receptors, including environmental justice populations were found in the impact analysis. The analysis complies with all directives and guidelines from the Cal/EPA Office of Environmental Health Hazard Assessment and the California Air Resources Board. The assessment is biased toward the protection of public health and takes into account the most sensitive individuals in the population. Using extremely conservative (health-protective) exposure and toxicity assumptions, the analysis demonstrates that members of the public potentially exposed to toxic air contaminant emissions of this project—including sensitive receptors such as the elderly, infants, and people with pre-existing medical conditions—will not experience any adverse chronic or cancer health risk as a result of that exposure. It is believed that every conservative health-protective assumption called for by state and Federal agencies responsible for establishing methods for analyzing public health impacts was included. The results of that analysis indicate that there would be no direct or cumulative adverse public health and safety impact to any population in the area. Therefore, given the absence of any adverse health impacts, there are no disparate health impacts and there are no environmental justice issues associated with Public Health and Safety.

Construction and operation of the IVS project would be in compliance with all applicable LORS regarding long-term and short-term project impacts in the area of Public Health and Safety.

4.11.1.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

IVS Project: 750 MW Alternative

Construction Impacts

Potential risks to public health during construction of the IVS project may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as diesel exhaust from heavy equipment operation. Criteria pollutant impacts from the operation of heavy equipment and particulate matter from earth moving are discussed in Section 4.2, Air Quality.

Ground disturbance would occur during construction from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of airborne dust, material being carried off site through soil erosion, and uncovering buried hazardous substances. A Phase I Environmental Site Assessment conducted for the IVS project site identified no Recognized Environmental Conditions (RECs) on the site per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage, or disposal of hazardous substances on the site, nor was there any other environmental concern that would require remedial action. One area of potential concern was identified off site, consisting of waste disposal ponds that may have affected soil or groundwater at the IVS project site. In the event that any unexpected contamination is encountered during construction, Measures WASTE-1 through WASTE-8 (which require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil) would ensure that contaminated soil does not affect the public.

The operation of construction equipment would result in air emissions from diesel-fueled engines. Diesel emissions are generated from sources such as trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. Although diesel exhaust contains criteria pollutants such as nitrogen oxides, carbon monoxide, and sulfur oxides, it also includes a complex mixture of thousands of gases and fine particles. These particles are primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust contains over 40 substances that are listed by the EPA as hazardous air pollutants and by the California Air Resources Board (ARB) as toxic air contaminants (TACs).

Exposure to diesel exhaust may cause both short- and long-term adverse health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Based on a number of health effects studies, the Scientific Review Panel on Toxic Air Contaminants recommended a chronic REL for diesel exhaust particulate matter of 5 micrograms of diesel particulate matter per cubic meter of air ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$. The Scientific Review Panel (SRP) did not recommend a value for an acute REL because available data in support of such a value was deemed insufficient. On August 27, 1998, ARB listed particulate emissions from diesel-fueled engines as a TAC and approved the SRP's recommendations regarding health effect levels.

Construction of the IVS project is anticipated to take place over a period of 40 months. The estimated worst-case construction emissions are 457 pounds per day (lbs/day) of PM10 and 71 lbs/day of PM2.5. Health risks resulting from construction activities were not estimated due to the short duration of this phase. A quantitative assessment of construction impacts on public health was not conducted because of the distance to the sparsely populated area surrounding the site and because using quantitative risk assessment tools has repeatedly shown that impacts due to construction vehicle diesel emissions are invariably less than substantial even to close-in receptors. In addition, as noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a longer time period, typically from 8 to 70 years.

Additionally, Measures provided in Section 4.2 would reduce the maximum calculated PM10 and PM2.5 emissions. Those Measures include the use of extensive fugitive dust and diesel exhaust control measures. The fugitive dust control measures are assumed to result in 90 percent reductions of those emissions. To further mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, a Measure for the use of ultra-low sulfur diesel fuel and Tier 2 or Tier 1 California Emission Standards for Off-Road Compression-Ignition Engines or the installation of an oxidation catalyst and soot filters on diesel equipment is recommended. Catalyzed diesel particulate filters are passive, self-regenerating filters that reduce particulate matter, carbon monoxide, and hydrocarbon emissions through catalytic oxidation and filtration. The degree of particulate matter reduction is comparable for both Measures in the range of approximately 85 to 92 percent. Such filters would reduce diesel emissions during construction and reduce any potential for adverse health impacts.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in construction-related health risks compared to the IVS project as described above. This is because these proposed modifications would be constructed in essentially the same manner and locations as these facilities were evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in construction-related health risks because this project feature does not require any construction activities.

Operation Impacts

Emissions Sources

The only stationary source of emissions during operation of the IVS project would be 1 emergency diesel generator which would be operated once a week for about 15 minutes. Mobile sources would have included diesel vehicles for washing the mirrors and other on-site maintenance vehicles. However, to reduce public health impacts during operation of the IVS project, the applicant proposes to use an electric fire water pump instead of a diesel pump, electric or hybrid vehicles instead of diesel or gasoline vehicles for mirror washing and other maintenance purposing, and reducing the number of trips and miles traveled during operations. Therefore, the only TAC that would be emitted from IVS stationary and mobile sources would be diesel particulate matter from the emergency generator.

Emissions Levels

The HRA for the IVS project as originally proposed (including 2 diesel emergency engines) resulted in a maximum chronic Hazard Index (HI) of 0.00003 and a worst-case individual cancer risk of 0.01 in 1 million at the location of maximum impact. As Table 4-51 shows, both the chronic hazard index and the cancer risk are below an adverse level, indicating that no long-term adverse health effects are expected as result of the IVS project. Because the results of the original HRA show that no adverse public health effects would occur, the applicant did not revise the HRA to reflect the elimination of the diesel fire water pump in favor of an electric pump. The decrease in TAC emissions due to removal of the diesel-fueled fire water pump would only reduce the projected health impacts which are already found to be not adverse under worst-case conditions.

Table 4-51 Operation Hazard/Risk at Point of Maximum Impact: Applicant Assessment

Type of Hazard/Risk	Hazard Index/Risk	Level	Adverse?
Chronic Noncancer	0.00003	1.0	No
Individual Cancer	0.01 in a million	10.0 in a million	No

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

A quantitative evaluation of the risk assessment results was conducted. The quantitative analysis of facility operations included the following:

- Stack parameters, building parameters, emission rates and locations of sources were obtained from the Application for Certification (AFC) submitted by the applicant to the California Energy Commission (CEC).
- Emissions from the diesel emergency generator were included.
- Used a receptor grid of 10,000 to 10,000 m east and 10,000 to 10,000 m north, at 200 m increments. Also modeled risks at residential and sensitive receptors identified in the AFC, and at the on-site point of maximum impact and the on-site worker.
- Exposure pathways assessed include inhalation, ingestion of home-grown produce, dermal absorption, soil ingestion and mother's milk.

Atmospheric dispersion modeling was conducted using the CARB/OEHHA Hotspots Analysis and Reporting Program (HARP), Version 1.4a. Screening meteorological data was used, as local meteorological data compatible for use in the HARP ISCST analysis was not provided by the applicant.

The emission factors used in the analysis of cancer risk and hazard for diesel emissions from the emergency generator were obtained from the AFC and are listed below:

- Diesel annual emission rate from emergency generator: ..... 0.14 lb/yr
- Diesel hourly emission rate from emergency generator: ..... 0.01 lb/hr

For cancer risk calculations using the HARP model, the "Derived(Adjusted)Method" was used and for chronic noncancer hazard the "Derived(OEHHA)Method" was used.

The results of that analysis are summarized in Table 4-52 and are compared to the results presented by the applicant for IVS project. The two parcels of private land that are surrounded by the IVS project site would have risks and chronic hazard less than the values determined for the on-site PMI and maximally exposed worker.

Table 4-52 Cancer Risk and Chronic Hazard Index

	PMI (Table Note 1)	MEIR (Table Note 2)	MEIW (Table Note 3)	Sensitive Receptor (Table Note 4
CEC Analysis (emissions from diesel emergency generator only)				
Cancer Risk (per million)	0.23	0.0020	0.046	0.00082
Chronic HI	0.00014	0.0000012	0.00015	0.00000052
Applicant's Analysis (emissions from diesel emergency generator and diesel fire pump)				
Cancer Risk (per million)	0.01	N/A	N/A	N/A
Chronic HI	0.00003	N/A	N/A	N/A

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Note 1: The PMI is located on site.

Table Note 2: Residential is located at a residence approximately 3.7 miles west of the site of the diesel emergency generator

Table Note 3: The MEIW is located on site.

Table Note 4: The sensitive receptor is located at Westside Elementary School, located approximately 8.3 miles east of the site of the diesel emergency generator.

Table Key: HI = Chronic Hazard Index; MEIR = maximum exposed individual resident; MEIW = maximum exposed individual worker; N/A = not addressed; PMI= point of maximum impact determined in staff's analysis.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in operations-related health risks compared to the IVS project as described above. This is because these proposed modifications would be operated in essentially the same manner and locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will result in only very minor emissions from the trucks transporting water to the IVS project site. These emissions would be a very small amount of the total emissions for the project operations and, therefore, would not substantially change the operations-related health risks compared to operation of the original IVS project.

Closure and Decommissioning Impacts

Closure of the IVS project (temporary or permanent) would follow a Project Closure Plan prepared by the applicant and designed to minimize public health and environmental impacts. Permanent closure would presumably occur 40 years after the start of operation unless the project remains economically viable past that time. Decommissioning procedures would be consistent with all applicable LORS and would be submitted to the BLM for approval before implementation. Impacts to public health from the closure and decommissioning process would

represent a small fraction of the impacts associated with the construction or operation of the IVS project. Therefore based on this analysis for the construction and operation phases of this project, public health-related impacts from closure and decommissioning of the IVS project would not be adverse.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in health risks during decommissioning compared to the IVS project as described above. This is because these proposed modifications would be decommissioned and removed essentially the same as these facilities were evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in decommissioning health risks because when this water supply is no longer needed, the truck trips will cease and there will be no demolition associated with the termination of the use of the alternative water source.

709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative would result in short- and long-term public health and safety impacts very similar to the impacts described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the air quality effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project.

The impacts of the four applicant-proposed modifications related to health risks during construction, operations, and decommissioning would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

300 MW Alternative

The types of construction and operation public health and safety impacts under the 300 MW Alternative would be similar to, but substantially less than, the IVS project. Because the IVS project impacts are less than substantial, the impacts of the 300 MW Alternative would also be less than substantial due to the smaller extent of construction disturbance and the smaller number of SunCatchers operated under the 300 MW Alternative.

The impacts of the four applicant-proposed modifications related to health risks during construction, operations, and decommissioning would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

Drainage Avoidance #1 Alternative

The types of construction and operation public health and safety impacts under Drainage Avoidance #1 Alternative would be similar to, but slightly less than, the IVS project. Because the IVS project impacts are less than substantial, the impacts of the Drainage Avoidance #1 Alternative would also be less than substantial due to the slightly smaller extent of construction disturbance and the lower number of SunCatchers operated under the Drainage Avoidance #1 Alternative.

The impacts of the four applicant-proposed modifications related to health risks during construction, operations, and decommissioning would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

Drainage Avoidance #2 Alternative

The types of construction and operation public health and safety impacts under Drainage Avoidance #2 Alternative would be similar to, but less than, the IVS project. Because the IVS project impacts are less than substantial, the impacts of the Drainage Avoidance #2 Alternative would also be less than substantial due to the smaller extent of construction disturbance and the lower number of SunCatchers operated under the Drainage Avoidance #2 Alternative.

The impacts of the four applicant-proposed modifications related to health risks during construction, operations, and decommissioning would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under No Action Alternative, the BLM would not approve the right-of-way (ROW) grant and would not amend the California Desert Conservation Area Plan (CDCA Plan, 1980 as amended). As a result, no solar energy project would be constructed on the IVS project site and

BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the public health and safety effects associated with construction and operation of a Build Alternative would not occur. However, the site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could result in public health and safety effects similar to the IVS project, in other locations.

No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to make the site unavailable for future solar development. As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no soil erosion impacts or impacts to jurisdictional waters. As a result, this No Action Alternative would not result in impacts to public health and safety. However, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have public health and safety impacts similar to the IVS project, in other locations.

No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant but would amend the CDCA Plan to allow for other solar projects on the site. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, public health and safety impacts would result from the construction and operation of that solar technology and resulting ground disturbance and would likely be similar to the public health and safety impacts under the IVS project. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in public health and safety impacts similar to the impacts under the IVS.

4.11.1.5 Cumulative Impacts

Cumulative impacts can occur if the construction and/or the operation of the IVS project occur concurrently with the construction and/or operation of other cumulative projects. Cumulative impacts would occur locally if the IVS project impacts combine with impacts of other projects in the same air basin. For this cumulative impact analysis, the emissions from construction or operation of the IVS project could potentially combine with emissions from present and reasonably foreseeable projects to result in adverse health effects to the public. Cumulative impacts to public health could occur as a result of implementation of the IVS project on both a local and regional level. The geographic extent for the analysis of local cumulative impacts associated with the IVS project is the Salton Sea Air Basin (SSAB), which contains all of Imperial County and parts of Riverside County.

There are no current or future projects within a 6 mi radius of the IVS project site that could contribute to a public health cumulative impact and no further analysis was conducted. Nevertheless, there is a potential for substantial future development in the project area and throughout the southern California desert region, as indicated by the list of cumulative projects provided in Section 2.10, Overview of the Cumulative Impacts Analysis, which includes several energy-generating projects employing solar or wind technologies.

Most of the cumulative projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to health risks less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects.

The maximum cancer risk for emissions from the IVS project is 0.23 in 1 million at a point on the IVS project site. The maximum impact location occurs where pollutant concentrations from the IVS project would theoretically be the highest. Even at this location, any substantial change in lifetime risk to any person is not expected and the increase does not represent any real contribution to the average lifetime cancer incidence rate due to all causes (environmental as well as life-style and genetic). Modeled facility-related residential risks are even lower at more distant locations and actual risks are expected to be much lower because the worst-case estimates are based on conservative health-protective assumptions and, therefore, overstate the true magnitude of the risk expected. Therefore, the incremental impact of the additional risk posed by the IVS project is not considered to be individually or cumulatively adverse.

The nature of public health impacts from exposure to materials that could result in negative health effects combined with the vast area over which the future solar and wind development

projects could be built in southeastern California, southern Nevada, and western Arizona, as well as the relative isolation of these projects from sensitive receptors, precludes the potential for impacts of these projects to combine with each other to result in substantial adverse public health and safety impacts. Any emissions from construction of these projects would be dispersed over these areas and would not be expected to result in chronic health problems to sensitive receptors. Operation of the future solar and wind energy projects would result in negligible emissions, mostly related to worker vehicles and maintenance trucks, therefore, operation of these future projects would not result in negative regional health effects.

In summary, the public health and safety impacts of the IVS project would not combine with impacts of past, present, or reasonably foreseeable projects to result in cumulatively considerable local or regional impacts. Therefore, no mitigation is required to address potential cumulative project impacts.

4.11.1.6 Mitigation, Project Design Features, and Other Measures

No mitigation, project design features, or other measures are required for public health and safety.

4.11.1.7 Summary of Impacts

Table 4-53 summarizes the direct, indirect, short-term, long-term, and cumulative adverse health effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives.

As shown in Table 4-53, the construction and operation of the IVS project would not result in any unavoidable adverse impacts related to public health and safety.

4.11.2 Hazardous Materials

The purpose of the analysis in this section is to determine if the IVS project could potentially cause substantial adverse impacts to the public from the use, handling, storage, or transportation of hazardous materials at the proposed project site.

Table 4-53 Summary of Public Health and Safety, and Hazardous Materials Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	During construction, operations, and decommissioning, the IVS project may result in potential risks to public health related to airborne dust; equipment and vehicle emissions; use, handling, storage, and disposal of hazardous materials; and disturbance of contaminated soils. During operations, the IVS project may result in risks associated with the use and storage of quantities of hydrogen on the site, potential spills of hazardous materials, transportation of hazardous materials, seismic ground shaking, and site security.	*HAZ-1:* Use of specified hazardous materials only *HAZ-2:* Hazardous Materials Business Plan *HAZ-3*: Safety Management Plan for delivery of liquid hazardous materials *HAZ-4:* Construction Site Security Plan *HAZ-5:* Operation Security Plan *HAZ-6:* Compliance with all applicable Federal laws and regulations related to hazardous and toxic materials *WASTE-1:* Experienced and qualified professional engineer or geologist for site characterization during (if needed), demolition, excavation, and grading activities *WASTE-2:* Inspection, sampling, and written report when potentially contaminated soil is identified *WASTE-3:* Construction Waste Management Plan *WASTE-4:* Obtain a hazardous waste generator identification number from the United States Environmental Protection Agency *WASTE-5:* Proper notification and documentation of any waste management-	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		related enforcement action by any local, state, or Federal authority *WASTE-6:* Reuse/recycling plan for at least 50% of construction and demolition materials *WASTE-7:* Operation Waste Management Plan *WASTE-8:* All spills or releases of hazardous substances, hazardous materials, or hazardous waste are properly documented, cleaned up and wastes from the release/spill are properly managed and disposed of	
709 MW Alternative: Agency Preferred Alternative	Impacts similar to but reduced compared to the IVS project because of the reduction in the disturbed area and the number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Impacts similar to the IVS project and the Agency Preferred Alternative, but substantially reduced in magnitude due to the reduced area and number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Impacts would be similar to the IVS project and the Preferred Agency Alternative, but reduced in magnitude due to the reduced disturbed area and number of SunCatchers in this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Impacts would be similar to the IVS project and the Preferred Agency Alternative, but reduced in magnitude due to the reduced disturbed area and number of SunCatchers in this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

4.11.2.1 Methodology

For this analysis, the plausible potential loss of containment incidents (spills) for the hazardous materials to be used at the proposed facility was assessed. The worst case plausible event, regardless of cause, was analyzed to see whether the potential impacts and risk to local populations are substantially adverse. Hazardous material handling and use procedures are designed to reduce the likelihood of a spill, to reduce its potential size, and to prevent or reduce the potential migration of a spill off site to the extent that there would not be substantial off-site impacts.

The potential for the transportation, handling, and use of hazardous materials to impact the surrounding area was evaluated. All chemicals and natural gas were evaluated. The analysis examined the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. To accomplish this, the most current acceptable public health exposure levels (both acute and chronic) to protect the public from the effects of an accidental chemical release were used.

To assess the potential of released hazardous materials traveling off site and affecting the public, several aspects of the proposed use of materials at the IVS project were analyzed. It is recognized that some hazardous materials must be used at power plants. Therefore, the analysis focused on the choice and amount of chemicals to be used, the manner in which the chemicals would be used, the manner by which they would be transported to the facility and transferred to facility storage tanks, and the way in which those on-site materials would be stored on site.

The proposed engineering and administrative controls for hazardous materials use were reviewed. Engineering controls are physical or mechanical systems such as storage tanks or automatic shut-off valves that can prevent a spill of hazardous material from occurring, or that can limit the spill to a small amount or confine it to a small area. Administrative controls are rules and procedures that workers must follow to help either prevent accidents or keep them small if they do occur. Both engineering and administrative controls can act as either methods of prevention or methods of response and minimization. In both cases, the goal is to prevent a spill from moving off site and harming the public.

The proposed use of hazardous materials for the IVS project was reviewed and evaluated. The assessment followed the following steps:

- **Step 1:** Reviewed the chemicals and amounts proposed for on-site use and determined the need and appropriateness of their use. Only those that are needed and appropriate are allowed to be used. If a safer alternative chemical can be used, its use is recommended or required, depending on the impacts posed.

- **Step 2:** Those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off the site and impact the public, were removed from further assessment.

- **Step 3:** Measures included in the IVS project to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different size transfer-hose couplings, and administrative controls such as worker training and safety management programs.

- **Step 4:** Measures included in the IVS project to respond to accidents were reviewed and evaluated. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading, and administrative controls such as training emergency response crews.

- **Step 5:** Analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials even with the measures included in the IVS project. When those measures are sufficient, no further mitigation is recommended. If the proposed measures are not sufficient to reduce the potential for adverse impacts to an inconsequential level, additional prevention and response controls are recommended until the potential for causing harm to the public is reduced to an inconsequential level. It is only at this point that a recommendation would be made such that the project be allowed to use hazardous materials.

4.11.2.2 Definition of Resource

Hazardous materials such as mineral and lubricating oils, corrosion inhibitors, herbicides, and acids and bases to control pH would be used on the IVS project site. Hazardous materials used during the construction phase include gasoline, diesel fuel, motor oil, lubricants, and small amounts of solvents and paint. No acutely toxic hazardous materials would be used on site during construction. None of these materials pose a significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical states, and/or their environmental mobility.

4.11.2.3 Applicable Regulations, Plans, and Policies/Management Goals

The potential for impacts due to a simultaneous release of any of the hazardous chemicals from the proposed IVS project was considered along with any other existing or foreseeable nearby facilities. Because of the small amounts of the hazardous chemicals to be stored at the facility, it was determined that there was no possibility of producing an off-site impact. Because of this determination, and the additional fact that there are no nearby facilities using large amounts of hazardous chemicals, there is no possibility that vapor plumes would combine to produce an airborne concentration that would present an adverse risk. Therefore, construction and operation of IVS project would be in compliance with all applicable LORS for both long-term and short-term project impacts in the area of hazardous materials.

4.11.2.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

IVS Project: 750 MW Alternative

Small Quantity Hazardous Materials

In conducting this analysis, it was determined in Steps 1 and 2 that most of the hazardous materials proposed to be used at the IVS project pose minimal potential for off-site impacts because they would be stored in either solid form or in small quantities, have low mobility, low vapor pressure, or low levels of toxicity. These hazardous materials, which were eliminated from further consideration, are discussed briefly below.

During the project construction, the hazardous materials proposed for use include paint, cleaners, solvents, gasoline, diesel fuel, motor oil, welding gases, and lubricants. Any impact of spills or other releases of these materials would be limited to the site because of the small quantities involved, the infrequent use and hence reduced chances of release, and/or the

temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel all have very low volatility and would represent limited off-site hazards, even in larger quantities.

During operations, hazardous chemicals such as cleaning agents, lube oil, sulfuric acid, sodium hydroxide, ammonium hydroxide, diesel fuel and other various chemicals would be used and stored on site and represent limited off-site hazards due to their small quantities, low volatility, and/or low toxicity.

After removing from consideration those chemicals that pose no potential for risk of off-site impact in Steps 1 and 2, the evaluation continued with Steps 3, 4, and 5 to review the remaining hazardous material: hydrogen.

Large Quantity Hazardous Materials

Hydrogen

Hydrogen is used as the working fluid in the Stirling cycle engines. The IVS project includes 30,000 individual engines. The analysis was conducted assuming a worst case release of all the hydrogen on site. It was assumed that a hydrogen release would form a vapor cloud and detonate causing an unconfined vapor cloud explosion. The distance to an overpressure of 1.0 pounds per square inch (psi) was then determined. This is an overpressure that could cause some damage to structures and injury to exposed members of the general population. The maximum distance to this level of impact was estimated to be 0.13 mi. There are no public receptors at this distance and in general such overpressures would be confined to the IVS project site depending on the location of the cloud at detonation. It is nearly impossible to detonate hydrogen in an unconfined cloud and it disperses very rapidly due to its low density relative to air. The release scenarios are very conservative in that a release would almost certainly occur over a period of time resulting in substantial dispersion of the hydrogen while the cloud was forming. Actual experience with hydrogen releases have not resulted in unconfined cloud explosions. It is widely believed that unconfined hydrogen will not detonate without a high explosive initiating event.

The analysis provided is conservative and overestimates both the magnitude and the potential risk of any actual explosion that could occur at the IVS project facility. Therefore, the unconfined hydrogen explosion is not considered plausible and would not likely occur at the IVS project facility. Thus, use of hydrogen at the IVS project facility poses a risk of an on-site fire, but no plausible potential for substantial adverse impact on surrounding populations or the environment.

Measure HAZ-1 would ensure that no hazardous material would be used at the facility except as listed in the AFC and reviewed for appropriateness, unless there is prior approval by the CEC and the BLM. The chemicals and amounts proposed for on-site use were reviewed, and the need and appropriateness of their use were determined. HAZ-1 also requires changes to the allowed list of hazardous materials and their maximum amounts to be approved. Only those that are needed and appropriate would be allowed to be used. If a safer alternative chemical can be used, it is recommended or requires its use, depending on the potential impacts posed. See Table 4-54 for the list of proposed hazardous materials to be used.

Table 4-54 Hazardous Materials Usage and Storage During Operation of the IVS Project

Chemical	Use	Storage Location/Type	State	Storage Quantity
Insulating oil	Electrical equipment	Electrical equipment (contained in transformers and electrical switches)	Liquid	60,000 gal initial fill
Lubricating oil	Stirling Engine/dish drives PCU	Equipment 150 gal recycle tank located in the Maintenance Building	Liquid	40,000 gal initial fill with usage of 21 gal per month
Hydrogen	PCU working fluid	Generated on site and stored in pressure vessel	Gas	33,000 scf
Acetylene	Welding	Cylinders stored in maintenance buildings	Gas	1,000 cubic feet
Oxygen	Welding	Cylinders stored in maintenance buildings	Gas	1,000 cubic feet
Ethylene glycol	PCU Radiator Coolant, antifreeze	PCU radiator in the Maintenance Buildings	Liquid	40,000 gal initial fill with usage of 21 gal per month
Various solvents, detergents, paints, and other cleaners	Building maintenance and equipment cleaning	Three (3) 55 gal drums and 1 gal containers would be stored in the Maintenance Buildings	Liquid	Ten (10) 55 gal drums; Commercial 1 gal containers
Gasoline	Maintenance vehicles	5,000 gal AST at refueling station with containment	Liquid	5,000 gal
Diesel fuel	Firewater pump Maintenance Vehicles	Firewater skid; 5,000 gal AST refueling station with containment	Liquid	100 gal initial fill; 5,000 gal
Sodium hypochlorite 12.5% solution (bleach)	Disinfectant for potable water	Water treatment structure	Liquid	4 gal

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: AST = aboveground storage tank; gal = gallons; IVS = Imperial Valley Solar; PCU = power conversion unit; scf = standard cubic foot.

A Hazardous Materials Business Plan (HMBP) would be prepared and would incorporate state requirements for the handling of hazardous materials. Measure HAZ-2 ensures that the HMBP, which includes the Inventory and Site Map, Emergency Response Plan and Owner/Operator Identification, and Employee Training, would be provided to the Imperial County Department of Toxic Substances Control (ICDTSC) so that the ICDTSC can better prepare emergency response personnel for handling emergencies which could occur at the IVS project facility.

On-site Spill Response

To address spill response, an emergency response plan which includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, prevention equipment and capabilities, etc. would be prepared. Emergency procedures would be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

A Spill Prevention Control and Countermeasure Plan (SPCC) is required by Federal regulations and would be prepared for the petroleum-containing hazardous materials.

The El Centro Fire Department, at 900 South Dogwood, El Centro, would respond to emergencies at the IVS project facility. The response time to an emergency call from the IVS project site is approximately 30 minutes. Given the remote location, the hazardous material response time is acceptable, and the El Centro Fire Department is adequately trained and equipped to respond to an emergency at the IVS project site in a timely manner.

Transportation of Hazardous Materials

Containerized hazardous materials including sulfuric acid, and cleaning chemicals, would be transported to the IVS project facility via truck. While many types of hazardous materials would be transported to the site, previous modeling of spills involving much larger quantities of more toxic materials, aqueous ammonia and 93 percent sulfuric acid which are two hazardous materials that would be used, stored, and transported for the IVS project, has demonstrated that minimal airborne concentrations would occur at short distances from the spill.

During construction and operation of the IVS project, minimal amounts and types of hazardous materials (paint, cleaners, solvents, gasoline, diesel fuel, motor oil, lubricants, sodium hypochlorite, and welding gases in standard-sized cylinders) do not pose a substantial adverse risk of either spills or public impacts along any transportation route. Therefore, a specific transport route is not recommended.

Liquid hazardous materials can be released during a transportation accident, and the extent of their impact in the event of a release would depend on the location of the accident and the rate of vapor dispersion from the surface of the spilled pool. The likelihood of an accidental release during transport is dependent on three factors:

- The skill of the tanker truck driver
- The type of vehicle used for transport
- Accident rates

To address this concern, the risk of an accidental transportation release was evaluated in the IVS project area. The analysis focused on the area after the delivery vehicle leaves I-8 and State Route 98. It is appropriate to rely on the extensive regulatory program that applies to the shipment of hazardous materials on California Highways to ensure safe handling in general transportation (Federal Hazardous Materials Transportation Law 49 USC Section 5101 et seq., the United States Department of Transportation Regulations 49 CFR Subpart H, Section 172 700, and the California Department of Motor Vehicles (DMV) Regulations on Hazardous Cargo). These regulations also address issues of driver competence. In addition, Measure HAZ-3 would require preparation of a Safety Management Plan for delivery of liquid hazardous materials.

Seismic Issues

The possibility exists that an earthquake could cause the failure of a hazardous materials storage tank, the secondary containment system (berms and dikes), and/or electrically controlled valves and pumps. The failure of all these preventive control measures might then result in the release of hazardous materials.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused to several large and small storage tanks at the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while newer tanks sustained lesser damage with displacements and attached line failures. Therefore, an analysis of the codes and standards was conducted, which should be followed to adequately design and build storage tanks and containment areas that could withstand a large earthquake. The impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California, were also reviewed. No hazardous materials storage tanks were impacted by that earthquake. The IVS project facility would be designed and constructed to the applicable standards of the 2007 California Building Code for Seismic Zone 4. Therefore, on the basis of damage experienced from the Northridge earthquake to older tanks and the lack of failures during the Nisqually

earthquake with newer tanks, it is determined that tank failures during seismic events are not likely and do not represent a substantially adverse risk to the public.

Site Security

The IVS project proposes to use hazardous materials which necessitate that special site security measures should be developed and implemented to prevent unauthorized access. To address site security, the EPA published a Chemical Accident Prevention Alert regarding site security, the United States Department of Justice (DOJ) published a special report on Chemical Facility Vulnerability Assessment Methodology, the North American Electric Reliability Corporation (NERC) published Security Guidelines for the Electricity Sector in 2002, and the United States Department of Energy (DOE) published a draft Vulnerability Assessment Methodology for Electric Power Infrastructure in 2002. The energy generation sector is one of 14 areas of critical infrastructure listed by the United States Department of Homeland Security. On April 9, 2007, the Department of Homeland Security published an Interim Final Rule in the Federal Register (6 CFR Part 27) requiring facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures.

To ensure that the IVS project facility or a shipment of hazardous material to that facility is not the target of unauthorized access, HAZ-4 and HAZ-5 are proposed to address construction and operation security plans. These plans would require the implementation of site security measures that are consistent with both the above-referenced documents and applicable CEC and BLM guidelines. The goal of these Measures is to provide the minimum level of security for power plants needed to protect California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for the IVS project is dependent on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event.

To determine the level of security, the CEC used an internal vulnerability assessment decision matrix modeled after the DOJ Chemical Vulnerability Assessment Methodology, the NERC 2002 guidelines, the DOE VAM-CF model, and the Department of Homeland Security regulations published in the Interim Final Rule. It was determined that the IVS project would fall into the "low vulnerability" category, so certain security measures should be implemented but a individual vulnerability assessment is not required.

These security measures include perimeter fencing and breach detectors, guards (if appropriate), alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contact in the event of a security breach. Site access for vendors would be strictly controlled. Consistent with current state and Federal regulations

governing the transport of hazardous materials, hazardous materials vendors would have to maintain their transport vehicle fleets and employ only drivers who are properly licensed and trained. The project owner would be required, through its contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to DOT requirements that hazardous materials vendors prepare and implement security plans per 49 CFR 172.800 and ensure that all hazardous materials drivers are in compliance with personnel background security checks per 49 CFR Part 1572, Subparts A and B. The BLM may authorize modifications to these measures, or may require additional measures in response to additional guidance provided by the Department of Homeland Security, DOE, or NERC, after consultation with appropriate law enforcement agencies and the applicant.

Applicant-Proposed Modifications

The applicant-proposed modifications to the transmission line, water line, and the alternative water supply will not in differences in small and large quantity hazardous materials, on-site spill response, transportation of hazardous materials, or seismic issues compared to the IVS project as described above. This is because these proposed modifications would be design, constructed, and operated in essentially the same manner and locations as these facilities were evaluated for the original IVS project.

The applicant-proposed modification to the hydrogen system were evaluated to determine if the effects of that modification were similar to the effects under the original IVS project. The proposed modification to the hydrogen storage system is essentially similar to that analyzed for the original IVS project. The hydrogen storage modification is within the same analysis area, and the geographic and resource conditions are sufficiently similar to those analyzed for the original IVS project.

As described for the original IVS project, an on-site centralized hydrogen gas supply, storage, and distribution system was proposed and evaluated. Modifications proposed to this system for all the IVS project and the other Build Alternatives would require the amount of hydrogen stored for each SunCatcher to be increased from 3.4 to 11 standard cubic feet (scf). To support this increase in hydrogen storage for each SunCatcher, the high pressure supply tanks and low pressure dump tanks at each compressor group would accommodate 29,333 scf and 9,900 scf, respectively. In addition, each of the 30 high pressure tanks that supply hydrogen to the power conversion units within a group of 12 SunCatchers under the current design will have a capacity of 489 scf.

For the original IVS project, a distributed hydrogen system was evaluated. That analysis provided a worst-case scenario release of all the hydrogen on site at the same time. It was assumed that a hydrogen release would form a vapor cloud and detonate causing an

unconfined vapor cloud explosion. The distance to an over pressure of 1.0 pounds per square inch (psi) was then determined. This is an overpressure that could cause some damage to structures and injury to exposed members of the general population. The maximum distance to this level of impact was estimated to be 0.13 mi. There are no public receptors at this distance and in general such overpressures would be confined to the project site depending on the location of the cloud at detonation.

With the increase of hydrogen that would be required under the applicant-proposed modification, the impacts from a hydrogen release would be slightly greater in magnitude. However, results from the additional modeling demonstrated that an accidental release of hydrogen, under conservation worst-case scenario conditions, will not impact the public or environmental receptors in the vicinity of the project site. The impact distance from the point of release from each of the scenarios analyzed is estimated to range from 0.04 to 0.3 mi.

Given that the overall function of the modified on-site hydrogen system is essentially the same as that analyzed for the original IVS project, it is expected that the environmental consequences associated with the proposed hydrogen storage modifications would be similar to those analyzed for the original IVS project. In summary, the applicant proposed modifications to the hydrogen storage system do not result in changes related to hydrogen use and storage or the impacts associated with them compared to the impacts evaluated for original IVS project.

Facility Closure and Decommissioning

The requirements for the handling of hazardous materials remain in effect until such materials are removed from the site, regardless of facility closure. Therefore, the facility owners are responsible for continuing to handle such materials in a safe manner, as required by applicable laws. In the event that the facility owner abandons the facility in a manner that poses a risk to surrounding populations, BLM would coordinate with the California Office of Emergency Services, El Centro Fire Department, and the California Department of Toxic Substances Control (DTSC) as BLM would be the landowner of the abandoned facility. To ensure that any unacceptable risk to the public is eliminated, funding for such emergency action as well as site removal, rehabilitation, and revegetation activities would be available from a performance bond required of the applicant by BLM.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in hazardous materials impacts during decommissioning compared to the IVS project as described above. This is because these proposed modifications would be decommissioned and removed essentially the same as these facilities were evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in decommissioning impacts related to hazardous materials because when this water supply is no longer needed, the truck trips will cease and there will be no demolition associated with the termination of the use of the alternative water source.

709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative would result in short- and long-term hazardous materials impacts very similar to the impacts described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the hazardous materials effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project.

The impacts of the four applicant-proposed modifications related to hazardous materials during construction, operations, and decommissioning would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

300 MW Alternative

The types of construction and operation hazardous materials impacts under the 300 MW Alternative would be similar to, but substantially less than, the IVS project. As discussed above, the IVS project impacts analysis considered the worst case, plausible event, and the impacts were found not to be substantial with the incorporation of the identified measures. The impacts of the 300 MW Alternative would be even smaller due to the reduced use, handling, storage, and transport of hazardous materials and the smaller number of SunCatchers under the 300 MW Alternative. Construction and operation risks to workers due to the use of hydrogen would also be reduced under the 300 MW Alternative because of the reduced number of SunCatchers.

The impacts of the four applicant-proposed modifications related to hazardous materials during construction, operations, and decommissioning would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

Drainage Avoidance #1 Alternative

The types of construction and operation hazardous materials impacts under Drainage Avoidance #1 Alternative would be similar to, but slightly less than, the IVS project. As discussed above, the IVS project impacts analysis considered the worst case, plausible event, and the impacts were found not to be substantial with the incorporation of the identified measures. The impacts of the Drainage Avoidance #1 Alternative would be even smaller due to the reduced use, handling, storage, or transport of hazardous materials and the smaller number of SunCatchers under the Drainage Avoidance #1 Alternative. Construction and operation risks to workers due to the use of hydrogen would also be reduced under the Drainage Avoidance #1 Alternative because of the reduced number of SunCatchers.

The impacts of the four applicant-proposed modifications related to hazardous materials during construction, operations, and decommissioning would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

Drainage Avoidance #2 Alternative

The types of construction and operation hazardous materials impacts under Drainage Avoidance #2 Alternative would be similar to, but slightly less than, the IVS project. As discussed above, the IVS project impacts analysis considered the worst case, plausible event, and the impacts were found not to be substantial with the incorporation of the identified measures. The impacts of the Drainage Avoidance #2 Alternative would be even smaller due to the reduced use, handling, storage, or transport of hazardous materials and the smaller number of SunCatchers under the Drainage Avoidance #2 Alternative. Construction and operation risks to workers due to the use of hydrogen would also be reduced under the Drainage Avoidance #2 Alternative because of the reduced number of SunCatchers.

The impacts of the four applicant-proposed modifications related to hazardous materials during construction, operations, and decommissioning would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction, operation, and decommissioning activities similar to the IVS project relative to those four proposed modifications.

No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the BLM would not approve the ROW grant and would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the IVS

project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no impacts related to hazardous materials associated with construction and operation of a Build Alternative would occur. However, the site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have impacts related to hazardous materials similar to the IVS project, in other locations.

No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would amend the CDCA Plan to make the site unavailable for future solar development. As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no impacts related to hazardous materials. As a result, this No Action Alternative would not result in impacts related to hazardous materials. However, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have impacts related to hazardous materials similar to the IVS project, in other locations.

No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant but would amend the CDCA Plan to allow for other solar projects on the site. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts related to hazardous materials would result from the construction and operation of that solar technology and resulting ground disturbance and would likely be similar to those impacts under the IVS project. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in impacts related to hazardous materials similar to the impacts under the IVS.

4.11.2.5 Cumulative Impacts

The geographic area considered for cumulative impacts from the use of hazardous materials is the area within 1 mi of the IVS project site boundary. There is no potential to cause impacts beyond the facility boundary. For this analysis, no other projects are located close enough to the proposed IVS project site to cause cumulative impacts on any surrounding population.

There are no past or currently operating projects in the geographic area that would affect the same area that would be affected by the IVS project facility. There are no reasonably foreseeable future projects in the geographic area that would affect the same area that would be affected by accidental releases at the proposed facility.

Because of the small amounts of the hazardous chemicals to be stored at the IVS project facility, it was determined that there was no possibility of producing an off-site impact. Because of this determination, and the additional fact that there are no nearby facilities using large amounts of hazardous chemicals, there is no possibility that vapor plumes would combine to produce an airborne concentration that would present a substantial cumulative adverse risk.

4.11.2.6 Mitigation, Project Design Features, and Other Measures

HAZ-1 The project owner shall not use any hazardous materials not listed in Table 4-54 or in greater quantities than those identified by chemical name in 6 CFR Part 27 unless approved in advance by the BLM's authorized officer and Compliance Project Manager (CPM).

Verification: The project owner shall provide to BLM's authorized officer and the CPM in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Hazardous Materials Business Plan and a Risk Management Plan to the Imperial County Department of Toxic Substances Control, BLM's authorized officer and the CPM for review. After receiving comments from Imperial County, BLM's Authorized Officer and the CPM, the project owner shall reflect all received recommendations in the final documents. If no comments are received from the county within 30 days of submittal, the project owner may proceed with preparation of final documents upon receiving comments from BLM's authorized officer and the CPM. Copies of the final Hazardous Materials Business Plan shall then be provided to the Imperial County Department of Toxic Substances Control for information and to the BLM's authorized officer and CPM for approval.

Verification: At least 60 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Hazardous Materials Business Plan to BLM's authorized officer and the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of liquid hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least sixty (60) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to BLM's authorized officer and the CPM for review and approval.

HAZ-4 At least thirty (30) days prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to BLM's authorized officer and the CPM for review and approval. The Construction Security Plan shall include the following:

(1) Perimeter security consisting of fencing enclosing the construction area;

(2) Security guards;

(3) Site access control consisting of a check-in procedure or tag system for construction personnel and visitors;

(4) Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;

(5) Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and

(6) Evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify BLM's authorized officer and the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-5 The project owner shall prepare a site-specific Security Plan for the operational phase and shall be made available to BLM's authorized officer and the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

(1) Permanent full perimeter fence, at least 8 feet high around the Solar Field;

(2) Main entrance security gate, either hand operable or motorized;

(3) Evacuation procedures;

(4) Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

(5) Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;

(6) A statement (refer to sample, attachment "A") signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and Federal law regarding security and privacy;

(7) A statement(s) (refer to sample, attachment "B") signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site.

(8) Site access controls for employees, contractors, vendors, and visitors;

(9) Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the

control room) capable of viewing, at a minimum, the main entrance gate; and

(10) Additional measures to ensure adequate perimeter security consisting of either:

(a) Security guard present 24 hours per day, seven days per week, or

(b) Power plant personnel on site 24 hours per day, seven days per week and all of the following:

1. The CCTV monitoring system required in number 8 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; and

2. Perimeter breach detectors or on-site motion detectors.

The project owner shall fully implement the security plans and obtain BLM's authorized officer and CPM approval of any substantive modifications to the security plans. BLM's authorized officer and the CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power plant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the applicant.

Verification: At least 30 days prior to the initial receipt of hazardous materials on site, the project owner shall notify BLM's authorized officer and the CPM that a site-specific Operations Site Security Plan is available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-6 The holder (project owner) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 USC 2601 et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702 799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1 761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b

Verification: A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to BLM's authorized officer and the CPM concurrent with the filing of the reports to the involved Federal agency or State government.

WASTE-1 The Imperial Valley Solar project owner (project owner) shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for during site characterization (if needed), demolition, excavation, and grading activities, to the CPM and AO for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil and impact public health, safety and the environment.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM and AO for review and approval.

WASTE-2 If potentially contaminated soil is identified during site characterization, demolition, excavation or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control or Regional Water Quality Control Board, and the CPM and AO stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the CPM and AO and representatives of the Department of Toxic Substances Control or Regional Water Quality Control Board, for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the professional engineer or professional geologist to the CPM and AO within five days of their receipt. The project owner shall notify the CPM and AO within 24 hours of any orders issued to halt construction.

WASTE-3 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM and AO for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications; and
- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM and AO for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-4 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency (EPA) prior to generating any hazardous waste during project construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation and notification and receipt of the number to the CPM and AO in the next scheduled Monthly Compliance Report after receipt of the number.

Submittal of the notification and issued number documentation to the CPM and AO is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to EPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM and AO in the next scheduled compliance report.

WASTE-5 Upon notification of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM and AO of any such action taken or proposed against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts, and describe how the violation will be corrected.

Verification: The project owner shall notify the CPM and AO in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.

WASTE-6 The project owner shall provide a reuse/recycling plan for at least 50% of construction and demolition materials prior to any building or demolition, including closure/decommissioning. The project owner shall ensure compliance and shall provide proof of compliance documentation to the CPM and AO, including a recycling and reuse summary report, receipts, and records of measurement. Project mobilization and construction shall not proceed until the CPM and AO issue an approval document.

Verification: At least 60 days prior to the start of any construction or demolition activities, the project owner shall submit a reuse recycling plan to the CPM and AO for review and approval. The project owner shall ensure that project activities are consistent with the approved reuse/recycling plan and provide adequate documentation of the types and volumes of wastes generated, how the wastes were managed, and volumes of wastes diverted. Project mobilization and construction shall not proceed until the CPM and AO issue an approval document. Not later than 60 days after completion of project construction, the project owner shall submit documentation of compliance with the diversion program requirements to the CPM and AO. The required documentation shall include a recycling and reuse summary report along with all necessary receipts and records of measurement from entities receiving project wastes.

WASTE-7 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the SES Solar Two facility and shall submit the plan to the CPM and AO for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes will be managed, and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed of upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM and AO for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM and AO within 20 days of notification from the CPM and AO that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste

Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-8 The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are documented and cleaned up and that wastes generated from the release/spill are properly managed and disposed of, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document management of all unauthorized releases and spills of hazardous substances, hazardous materials, or hazardous wastes that occur on the project property or related linear facilities. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; how release was managed and material cleaned up; amount of contaminated soil and/or cleanup wastes generated; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. A copy of the unauthorized release/spill documentation shall be provided to the CPM and AO within 30 days of the date the release was discovered.

4.11.2.7 Summary of Impacts

Table 4-53, provided earlier, summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to hazardous materials.

As shown in Table 4-53, evaluation of the IVS project and the other Build Alternatives with the measures described indicates that hazardous material use, storage, and transportation would not pose a substantial adverse impact on the public. Based on implementation of those measures, the use, storage, and transportation of hazardous materials associated with the IVS project would not present a substantial risk to the public. Therefore, the IVS project would not result in unavoidable adverse impacts related to hazardous materials.

4.12 Recreation

4.12.1 Methodology

The effects of the Imperial Valley Solar (IVS) project on the recreation environment were assessed based on the following considerations:

- Directly or indirectly disrupt recreation activities in established Federal, State, or local recreation areas and/or wilderness areas.
- Substantially reduce the scenic, biological, cultural, geologic, or other important factors that contribute to the value of Federal, State, local, or private recreational facilities or wilderness areas.
- Diminish the enjoyment of existing recreational opportunities.

4.12.2 Definition of Resource

The *California Desert Conservation Area Plan* (CDCA Plan) (BLM, 1980, as amended) recognizes that the California desert is "…a reservoir of open space and as a place for outdoor recreation" (CDCA Plan, BLM, 1980, page 69). The CDCA Plan notes that the diverse landscape of the California desert provides for a variety of physical settings. Further, the CDCA Plan identifies the wide variety of desert recreation uses, ranging from off-road vehicles to outdoor preservationists, and the increasing challenge to accommodate these varied and sometimes competing uses. The project site and surrounding area appear to be primarily used by off-highway vehicle (OHV) enthusiasts.

As discussed in Section 3.12, Recreation, the Juan Bautista de Anza National Historic Trail (Anza Trail) corridor passes through and/or is adjacent to the IVS project site. The trail corridor is an inferred alignment between two historic campsite locations, based on historic journals and maps. According to the United States National Park Service (NPS), the Anza Trail is mapped and identified by the United States Bureau of Land Management (BLM) through signs on designated routes of travel north and south of the project site. The NPS further states that the Anza Trail Corridor follows paved segments of Dunaway Road, which is east of the IVS project site, and along Evan Hewes Highway, which is north of the IVS project site.

4.12.3 Applicable Regulations, Plans, and Policies/Management Goals

The management goals of the CDCA Plan Recreation Element are to:

(1) Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use.

(2) Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety.

(3) Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources.

(4) Emphasize the use of public information and educational techniques to increase public awareness, enjoyment, and sensitivity to desert resources.

(5) Adjust management approach to accommodate changing visitor use patterns and preferences.

(6) Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.

4.12.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.12.4.1 IVS Project: 750 MW Alternative

Approval of the IVS project would directly remove approximately 6,500 acres (ac), 6,140 ac of which are BLM land, from potential use for recreational opportunities such as OHV use and camping. As noted in Section 3.12, Recreation, ten Open Routes designated by the *Western Colorado Desert Routes of Travel Designations* (WECO) amendment are on the IVS project and

construction laydown sites, and two Open Routes are in the vicinity of the IVS and construction laydown sites. For a detailed discussion on the impacts to the Open Routes on the IVS site, refer to Section 4.9, Land Use. The areas north and west of the IVS project site are available for recreational activities (particularly for OHV), and construction of the IVS project would disrupt a highly active recreational area by closure of the Open Routes through the site.

In addition, according to the Recreation Element of the CDCA Plan, "…lands managed by the Bureau [BLM] are especially significant to recreationists." The conversion of 6,140 ac of public land to support the IVS project components and activities would directly disrupt current recreation activities in established Federal, State, and local recreation areas and would result in adverse effects on recreational users of these lands by closing designated Open Routes.

The NPS has stated that the IVS project would substantially alter the visual landscape of and around the project area, particularly views from the Anza Trail corridor. Further, the NPS concludes that the IVS project has the potential to degrade the integrity of the historic character of the Anza Trail and its related resources in the vicinity of the IVS project site particularly due to the "scale and visual impacts of the proposed project." As a consequence, the IVS project has the potential to diminish the public's ability to experience and understand the associated historic expedition and the cultural landscape of that period.

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in impacts related to recreation resources compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in impacts related to recreation resources because this modification will not result in any changes in land use or impacts to any recreation resources off the IVS project site.

4.12.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alterative would result in effects related to recreation and the applicable laws, ordinances, regulations, and standards (LORS) similar to those effects described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the recreation effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS

project. The measure described in the following section to address adverse impacts to the Anza Trail of the IVS project would also apply to the Agency Preferred Alternative.

The impacts of the four applicant-proposed modifications related to recreation resources would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.12.4.3 300 MW Alternative

The 300 MW Alternative would be on the same part of the IVS project site as Phase 1 of the IVS project. It would consist of 12,000 SunCatchers with a net generating capacity of approximately 300 MW occupying approximately 2,600 ac of land. The conversion of those 2,600 ac of land to support the 300 MW Alternative would directly disrupt current recreational activities in established Federal, State, and local recreation areas and would result in adverse effects on recreational users of these lands. Under the 300 MW Alternative, Open Routes on the northern and western parts of the site could remain open. However, the total adverse effects on recreation under the 300 MW Alternative would be proportionately less than under the IVS project.

As noted above, the NPS has stated that the IVS project would substantially alter the visual landscape, historic character, and related resources on and in the vicinity of the IVS project site. The 300 MW Alternative is west of the inferred trail on and near the IVS project site and potentially would affect the Anza Trail corridor to a lesser degree than under the IVS project.

The impacts of the four applicant-proposed modifications related to recreation resources would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.12.4.4 Drainage Avoidance #1 Alternative

The conversion of 4,690 ac of land to support the components and activities associated with the Drainage Avoidance #1 Alternative would directly disrupt current recreational activities in established Federal recreation areas and would result in adverse effects on recreational users of these lands. This effect would be the same under the IVS project because the site boundary would not change under the Drainage Avoidance #1 Alternative and OHV access to these lands would be restricted.

As noted above, the NPS has stated that the IVS project would substantially alter the visual landscape, historic character, and related resources on and in the vicinity of the IVS project site. The Drainage Avoidance #1 Alternative would be on the same site as the IVS project and would likely result in similar adverse impacts on the Anza Trail corridor compared to the IVS project.

The impacts of the four applicant-proposed modifications related to recreation resources would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.12.4.5 Drainage Avoidance #2 Alternative

The conversion of 3,153 ac of land to support the components and activities associated with the Drainage Avoidance #2 Alternative would directly disrupt current recreational activities in established Federal recreation areas and would result in adverse effects on recreational users of these lands. Under the Drainage Avoidance #2 Alternative, some of the Open Routes on the eastern side of the site could remain open. However, this effect would be less than under the IVS project, because the fenced area would be smaller under the Drainage Avoidance #2 Alternative than under the IVS project.

As noted above, the NPS has stated that the IVS project would substantially alter the visual landscape, historic character, and related resources on and in the vicinity of the IVS project site. The Drainage Avoidance #2 Alternative would be the central part of the IVS project site and would likely result in reduced adverse impacts on the Anza Trail corridor compared to the IVS project because the developed area would be further away from the Anza Trail Corridor.

The impacts of the four applicant-proposed modifications related to recreation resources would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.12.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the right-of-way (ROW) grant for the IVS project would not be approved by the BLM, and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the recreation-related impacts of the IVS project would not occur at the IVS project site, including the conversion of 6,500 ac of land, closure of Open Routes, and any resulting impacts to recreation uses or the Anza Trail corridor.

The IVS project site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would potentially have similar impacts on recreation resources in other locations.

4.12.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the ROW grant for the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to prohibit other solar projects on the site. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing CDCA Plan.

Because the CDCA Plan would be amended for no solar project on the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, the recreation-related impacts of the IVS project would not occur at the IVS site, including the conversion of 6,500 ac of land, closure of Open Routes, and any resulting impacts to recreation uses or the Anza Trail corridor.

The IVS project site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would potentially have similar impacts on recreation resources in other locations.

4.12.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the ROW grant for the IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the IVS project site available for future solar development. As a result, the IVS project would not proceed. However, the site

would be available for other solar projects, which could result in similar recreation impacts compared to the IVS project.

4.12.5 Cumulative Impacts

The cumulative impacts study area and cumulative projects considered in the cumulative impacts analysis for recreation are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

Cumulative impacts to approximately 1,000,000 ac of land in the Southern California desert would result in adverse effects on recreational resources and would result in an unavoidable adverse impact. In consideration of cumulative land use compatibility impacts, the implementation of renewable projects in Southern California would occur mostly in undeveloped desert lands or areas of rural development, and therefore would not create physical divisions of established residential communities. Nonetheless, approximately 1,000,000 ac of land are proposed for solar and wind energy development in Southern California desert lands. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore result in a cumulative adverse impact.

Most of the cumulative projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to recreation resources less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects. Nonetheless, it should be noted that it is likely that some of the projects proposed within those 1 million acres will not be developed. Therefore, the actual amount of land that would be developed in renewable energy projects is expected to be less than 1 million acres.

The IVS project and the other Build Alternatives have the potential to diminish the public's ability to experience and understand the associated historic expedition and the cultural landscape of the period that Juan Bautista de Anza experienced. The NPS has stated that the IVS project would substantially alter the visual landscape of and around the IVS project site, particularly views from the Anza Trail corridor. Further, the NPS concludes that the IVS project has the potential to degrade the integrity of the historic character of the Anza Trail and its related resources in the vicinity of the IVS project site, particularly due to the "scale and visual impacts of the proposed project." While this is mostly an impact to the historic context of the Anza Trail, the IVS project and the other Build Alternatives still represent a cumulative change to the visual

and historic context of the Anza Trail. Therefore, the IVS project contributes to a secondary cumulative adverse impact to the recreational experience of the Anza Trail.

4.12.6 Mitigation, Project Design Features, and Other Measures

There are no measures identified to avoid or minimize the impacts of the IVS project related to the conversion of lands used for recreation to nonrecreation uses.

The following measure addresses potential effects of the IVS project on the Anza Trail corridor.

REC-1 **Juan Bautista de Anza National Historic Trail (Anza Trail) Corridor.** As recommended by the United States National Park Service (NPS), a Comprehensive Interpretive Plan for the Anza Trail will be prepared through applicant cooperation and coordination with the United States Bureau of Land Management (BLM) and the NPS. Potential components of this Plan as identified by the NPS could include, but not be limited to the following:

- New Interpretive Facilities
    - Installation of Yuha Well Wayside Exhibit
    - Additional Interpretation at the Anza Trail Overlook
    - Interpretive Exhibit at Plaster City Off-Highway Vehicle (OHV) Open Area
    - Supplement Exhibit at Sunbeam Rest Area on Interstate 8 (I-8)
- Anza Trail-Themed Exhibit at a Local Museum
- Anza Trail Interpretive Brochure
- Increase Accessibility of the BLM Yuha Desert Cultural History Anza Tour
- Re-evaluate and Complete the Anza Recreational Trail
- Historic Campsite Surveys (Archaeological Studies)
- Trail-Wide Mitigation Fund

It is assumed that the resources provided by the applicant that are required to prepare and implement the final Comprehensive Interpretive Plan and its

components would be roughly proportionate to the degree of impact of the IVS project on the Anza Trail.

4.12.7 Summary of Impacts

Table 4-55 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to recreation resources.

As shown in Table 4-55, the following unavoidable adverse impacts to recreation would occur if the IVS project was implemented and to a slightly lesser extent if the Agency Preferred Alternative or one of the other three Build Alternatives were to be implemented:

- The conversion of 6,140 ac of public land to support the project's components and activities would directly disrupt current recreational activities in established Federal, State, and local recreation areas and would result in adverse effects on recreational users of these lands by closing designated Open Routes.

- Because the IVS project would result in closure of OHV access routes on the IVS project site, the IVS project would result in adverse land use and planning impacts to recreation opportunities on the site as envisioned in the CDCA Plan and the WECO amendment.

- Cumulative impacts to approximately 1,000,000 ac of land in the Southern California desert would result in adverse effects on recreational resources and would result in an unavoidable adverse impact. In consideration of cumulative land use compatibility impacts, the implementation of renewable projects in Southern California would occur mostly in undeveloped desert lands or areas of rural development, and therefore would not create physical divisions of established residential communities. Nonetheless, approximately 1,000,000 ac of land are proposed for solar and wind energy development in Southern California desert lands. The conversion of these lands would preclude numerous existing land uses (including recreation, wilderness, rangeland, and open space) and therefore would result in a cumulative adverse impact.

- The IVS project and any of the other Build Alternatives represent a cumulative change to the visual and historic context of the Anza Trail. Therefore, the IVS project contributes to a secondary cumulative adverse impact to the overall recreational experience of the Anza Trail by adding modern development in the viewscape.

Table 4-55 Summary of Recreation Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	• Impacts to OHV Open Routes. • Vicinity impacts to the Anza Trail Corridor historic context. • Cumulative impacts to recreational opportunities in the California desert.	*REC-1:* Comprehensive Interpretive Plan for the Anza Trail	The IVS project would result in unavoidable adverse impacts after mitigation related to: The conversion of over 6,000 ac of land would disrupt current recreational activities in established Federal, State, and local recreation areas which would result in adverse effects on recreational users of these lands. Adverse land use and planning impacts to recreation opportunities on the site as envisioned in the CDCA Plan and the WECO amendment. A cumulative change to the visual and historic context of the Anza Trail to the overall recreational experience of the Anza Trail.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Impacts would be the same as for Phase I of the IVS project on approximately 2,600 ac. Therefore, the impacts would only occur on the west half of the project site and would be reduced accordingly, including reduced adverse impacts on the Anza Trail corridor compared to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	The conversion of 4,690 ac of land to support the components and activities associated with this Alternative would disrupt less land than under the IVS project and the Agency Preferred Alternative. The impacts to the Anza Trail would be the same as or similar to the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	The conversion of 3,153 ac of land to support the components and activities associated with this Alternative would disrupt less land than under the IVS project and the Agency Preferred Alternative. This Alternative would be on the central part of the project site and would likely result in reduced adverse	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	impacts on the Anza Trail corridor compared to the IVS project and the Agency Preferred Alternative.		
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	The site would be available for other solar projects, which could result recreation impacts similar to those under the IVS project and the Agency Preferred Alternative.	Potentially the same as the IVS project and the Agency Preferred Alternative.	Not determined, but potentially the same as or similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: ac = acres; Anza Trail = Juan Bautista de Anza National Historic Trail; CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; OHV = off-highway vehicle; ROW = right-of-way; WECO = Western Colorado Desert Routes of Travel Designations.

4.13 Socioeconomics and Environmental Justice

This socioeconomics impact analysis evaluates project-induced changes on community services and/or infrastructure, and related community issues such as environmental justice. This section also discusses the estimated beneficial impacts of the construction, operation, and decommissioning of the IVS Project and other related socioeconomic impacts.

4.13.1 Methodology

A socioeconomic analysis looks at beneficial impacts from construction and operation spending, and property and sales taxes, as well as potentially adverse impacts on housing, schools, and public services. To determine whether a project would have adverse impacts, this section analyzes whether the current status of these community services and capacities can absorb the project-related impacts in each of these areas. If the project's impacts could appreciably strain or degrade these services, the project is considered to result in a substantial adverse impact and mitigation is provided to reduce the impact.

In this analysis, a fixed percentage criterion was used for determining the presence of a minority or low-income population for environmental justice. Impacts on housing, schools, emergency medical services, law enforcement, parks and recreation, and cumulative impacts are based on professional judgments or input from local and state agencies. Substantial employment of people coming from regions outside the study area has the potential to create substantial adverse socioeconomic impacts.

The BLM must consider environmental justice in its decision-making process if its actions have an impact on the environment, environmental laws, or policies. Such actions that require environmental justice consideration may include:

- Adopting regulations;
- Enforcing environmental laws or regulations;
- Making discretionary decisions for actions that affect the environment;
- Providing funding for activities affecting the environment; and
- Interacting with the public on environmental issues.

In considering environmental justice in energy siting cases, a demographic screening analysis was used to determine whether a low-income and/or minority population exists within the area potentially affected by the project. The demographic screening is based on information in *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (United States Environmental Protection Agency, April 1998). The screening process relies on 2000 United States Census data to determine the presence of minority and below-poverty-level populations in the IVS project area.

4.13.2 Definition of Resource

Minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50 percent of the total population or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis.

4.13.3 Applicable Regulations, Plans, and Policies/Management Goals

Construction, operation, and decommissioning of the proposed IVS Project would not cause, a direct, indirect, or cumulative adverse socioeconomic impact on study area housing, schools, parks and recreation, law enforcement, and emergency services. Socioeconomic impacts of the IVS project would not combine with impacts of any past, present, or reasonably foreseeable local projects to result in cumulatively considerable local impacts. Therefore, there are no socioeconomic environmental justice issues related to this project. The IVS Project, as proposed, is consistent with applicable Socioeconomic LORS provided in Table 3-22. Therefore, construction, operation, and decommissioning of the IVS Project would comply with all applicable Federal and state LORS.

4.13.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four

applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.13.4.1 IVS Project: 750 MW Alternative

Induce Substantial Population Growth

For this analysis, "induce substantial population growth" is defined as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the IVS project would induce population growth, the availability of the local workforce and the population in the region was analyzed. "Local workforce" is defined as Imperial, San Diego, Riverside, and San Bernardino Counties. Construction workers beyond a 2 hour commute (either in- or out-of-state) would likely relocate for the workweek but would return to their primary residences and families on weekends.

The Imperial, San Diego, Riverside, and San Bernardino labor market areas were used for evaluation of construction worker availability and Imperial County was evaluated for community services and infrastructure impacts from construction of the IVS project.

Project construction is expected to occur over a 40 month period. The greatest number of construction workers (peak) would occur in the 7th month of construction. The number of construction workers would range from about 101 in the first month of construction to approximately 731 workers at peak construction. There would be an average of 360 workers per month during construction.

Table 4-56 shows that total labor by skill, in Imperial, San Diego, Riverside, and San Bernardino labor market areas, with annual averages for 2009, is adequate when compared to the IVS project needs. Peak construction activity would employ approximately 731 workers and represents less than 1 percent of the Imperial, San Diego, Riverside, and San Bernardino Counties labor market areas.

Table 4-56 2009 Construction Total Labor by Skill in Imperial, San Diego, Riverside, and San Bernardino Counties

Occupational Title	Annual Average 2009	Maximum Needed Per Month for IVS
Carpenters	55,075	47
Concrete Crews	8,840	46
Electricians	13,980	113
Ironworkers	760	48
Laborers	38,255	142
Miscellaneous Crews	N/A	10
Operators	8,675	86
Plumbers	12,550	26
IVS Technicians	N/A	32
SunCatchers Assemblers	N/A	64
SunCatchers Electricians	13,980	16
SunCatchers Ironworkers	760	32
SunCatchers Laborers	38,255	16
SunCatchers Material Handlers	N/A	16
SunCatchers Operators	8,675	8
SunCatchers Teamsters	32,265	12
SunCatchers Technicians	N/A	32
Teamsters	32,265	60
Technicians	N/A	5

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: IVS = Imperial Valley Solar; N/A = Not Available.

Because the majority of the construction workforce currently resides within Imperial, San Diego, San Bernardino, and Riverside Counties, construction, operation, and decommissioning of the project would have little impact with respect to inducing substantial population growth. For operations, the workforce is modest (164 workers) and most would reside in Imperial, San Diego, San Bernardino, and Riverside Counties. The decommissioning workforce would likely total the peak number of construction workforce. Inducement of substantial population growth either directly or indirectly by the IVS project would not be adverse.

Housing Supply

As shown reported by the California Department of Finance (CD, E 5 Population and Housing Estimates for Cities, Counties and the State, 2001 to 2008, with 2000 Benchmark. Sacramento, California, May 2008), the housing supply in the four-county area is more than adequate should some project construction or operation workers choose to relocate to the area. For example, housing units (single- and multiple-family, and mobile homes) in Imperial County

(unincorporated and incorporated) totaled about 55,600 units with an overall vacancy rate of 11 percent; Riverside County was about 775,000 units with an overall 13 percent vacancy rate; San Bernardino County was about 686,000 units with an overall 12 percent vacancy rate; and San Diego County had about 1,140,000 units with an overall 4.4 percent vacancy rate.

Housing, should it be required for a percentage of the construction and operation workforces, would likely be within a 1- to 2 hour commute of the IVS project site. Therefore, adequate housing exists and no new housing construction would be required. Because of the large labor force within commuting distance of the IVS project site, it is anticipated the majority of construction workers would commute to the site daily from their existing residences. No new housing construction would be required.

Displace Existing Housing and Substantial Numbers of People

The IVS project site is in the eastern section of Imperial County's Ocotillo/Nomirage PA. As cited in the Ocotillo/Nomirage Community Area Plan, "Due to water constraints, it is not anticipated the Ocotillo/Nomirage Community Area will experience a substantial amount of population growth."

Because the IVS project site is predominately Federal land and does not currently contain any housing, it would not displace existing housing. Private lands in the IVS project site are zoned for Open Space use. Few residences are present in the area, and no inhabited residence would be displaced as a result of the IVS project. Therefore, the IVS project would not displace any people or necessitate construction of replacement housing elsewhere.

Result in Substantial Physical Impacts to Government Facilities or Services

As discussed under the individual service subject headings below, the IVS project would not cause substantial impacts to service ratios, response times, or other performance objectives relating to emergency medical services, law enforcement, or schools. Fire protection, including the applicant's proposed on-site Fire Protection and Prevention Plan, is analyzed in Section 4.6, Fire and Fuels.

Emergency Medical Services

The IVS project site is in a remote area in Imperial County. The nearest hospital is El Centro Regional Medical Center, in El Centro, about 15 mi from the site with an estimated 14 minute

response time. Additional emergency medical service would be provided by Pioneers Memorial Healthcare, a full-service facility about 28 mi northeast of the project site in the City of Brawley.

Including emergency services provided by Imperial County Emergency Medical Services (EMS) Area 1 and a full-time fire station and advanced life support ambulance station in Ocotillo, there are seven life-support ambulances in the area with a proposal for additional EMS near the City of Imperial, about 20 mi away. The El Centro Fire Department and the Imperial County Public Health and Emergency Services indicated there is adequate capacity of local EMS to accommodate construction and operation of the IVS project.

The estimated response time for the Ocotillo/Nomirage PA is 10 to 25 minutes. In the event of a life threatening injury, air support would be directed through the Imperial County Sheriff's Department. Air support would be provided by Reach Air, which has major trauma treatment capability. Emergency air lift services can be provided locally in the City of Brawley, in San Diego County, and from as far away as Yuma, Arizona, depending on the availability of emergency air response equipment and crews.

The proposed IVS project safety procedures and employee training would minimize potential unsafe work conditions and the need for outside emergency medical response. The emergency medical services described above would be adequate during construction and operation. Therefore, the IVS project would not require construction of new or physically altered emergency medical facilities.

Law Enforcement

The Imperial County Sheriff's Department would provide police protection and public safety services (traffic and neighborhood police control, emergency calls, and crime prevention) to the IVS project site during construction and operation. The Sheriff's Department has an office in El Centro, 14 mi from the IVS project site. The Sheriff's Department has 229 full time employees with 111 sworn officers and 36 vehicles. Additional response support could be supplied by other patrols in the county and the California Highway Patrol (CHP). The level of crime in the IVS project area is low relative to other locations in Imperial County.

The IVS project is not expected to impact criminal activity, traffic, or crowd control, from a population perspective, because most of the construction labor force would be local. For the operations phase, the total workforce is modest (164 workers), with most coming from the 4-county area within commuting distance of the IVS project site. The IVS project would include appropriate site security measures during construction (fencing) and operation (24 hour site security monitoring in a control room via closed-circuit television and intercom system, security fencing, 24 hour security officers and off-site emergency response teams for after hour

emergencies) which would minimize the potential need for Imperial County Sheriff's Department assistance.

In comparison to residential or commercial uses, power plants do not attract large numbers of people and therefore require little in the way of law enforcement. Because of this and the proposed on-site safety and security measures, the existing law enforcement resources would be adequate to provide services to the IVS project during construction and operation. Therefore, the IVS project would not require new or physically altered law enforcement facilities.

Education

For the 2008 2009 school year, Imperial Unified School District (IUSD) had six schools and a total of 3,602 students in its service area which includes the IVS project site.

The construction workforce from Imperial, San Diego, San Bernardino, and Riverside Counties would be more than adequate to serve construction needs. This workforce would commute either daily or weekly to the site. Due to the commuting habits of construction workers, it is not expected any construction workers would relocate their families to the area. Therefore, the construction of the IVS project would not require construction of new or physically altered school facilities.

A total of 164 workers are needed to operate the IVS project. The operation workforce is expected to come from the surrounding areas and no operation workers are expected to relocate with their families. However, if all 164 operation workers were to relocate to within the IUSD service area, an average family size of 3.32 persons per household (United States Census Bureau, Household and Families, 2000 for Imperial County) would result in the addition of about 217 children to the local schools. Under this worst-case scenario, the IUSD could easily accommodate this number of additional students. Although the IUSD local schools are currently at capacity, the IUSD expects additions to enrollment based on projected growth rates and expected development. The IUSD indicated that it would be able to accommodate growth resulting from the IVS project and other projects at its existing schools. Therefore, operation of the IVS project would not require construction of new or physically altered school facilities.

Like all school districts in the state, the IUSD is entitled to collect school impact fees for new construction within its service area under the California Education Code Section 17620. These fees are based on a project's square feet of industrial space. The Main Services Complex of the IVS project, which would be considered industrial space, would be constructed largely on BLM land, with only a small amount private land affected. Therefore, the provisions of Education Code Section 17620 may apply to the private lands within the IVS project site but not to BLM lands.

Increase the Use of Existing Recreation Facilities

The Imperial County Parks and Recreation Department maintains a variety of community parks, off-road parks, and special activities throughout the County. The community parks amenities include swimming pools, picnic tables, baseball/softball fields, basketball courts, community centers, playgrounds, walking trails, and barbeques.

Given the existing labor force within a 2-hour commuting time of the IVS project site, it is not anticipated that employees would relocate to the immediate area. There are a number and variety of parks in the regional area. The IVS project would not require construction of new parks or substantially increase the use of existing parks. Therefore, the construction and operation workforce for the IVS project would not have a substantial adverse impact on County-owned parks and recreation facilities.

Public Benefits

Noteworthy public benefits of the IVS project include the direct, indirect, and induced impacts of the project. The dollars spent on or resulting from the construction and operation of the IVS project would have a ripple effect on the local economy. This ripple effect is measured by an input-output economic model. The model relies on a series of multipliers to provide estimates of the number of times each dollar of input or direct spending cycles through the economy in terms of indirect and induced output, or additional spending, personal income, and employment.

The IVS project would require workers, supplies, and services for the life of the project. Employees would use salaries and wages to purchase goods and services from other businesses. Those businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local and regional economy. This effect of indirect (jobs, sales, and income generated) and induced (employees' spending for local goods and services) spending continues with subsequent rounds of additional spending, which is gradually diminished through savings, taxes, and expenditures made outside the area. For this analysis, direct impacts were said to exist if the IVS project resulted in permanent jobs and wages; indirect impacts, if jobs, wages, and sales resulted from project construction; induced impacts, from the spending of wages and salaries on food, housing, and other consumer goods. The economic benefits of the IVS project are shown in Table 4-57.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply will not result in differences in impacts related to socioeconomics compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

Table 4-57 Economic Data and Information

Estimated Project Costs	$1.14 billion
Estimate of Locally Purchased Materials:	
Construction	$2.41 million
Operation (Operation and Maintenance)	$7.4 million annually
Estimated Annual Property Taxes	None – The IVS project is expected to be allowed a 100 percent property tax exemption as part of Section 73 of the California Revenue and Tax Code for solar energy systems. Also, it is primarily on Federal land managed by the BLM which is exempt from local property taxes. Because of AB 1451, if the California property tax exemption for solar energy systems is not renewed when it expires during the 2015–2016 fiscal year, then the project's property tax on private land would be $840,750 annually.
Estimated School Impact Fees	None – the "industrial square footage" of the project would be constructed on Federal land managed by the BLM.
Estimated Direct Employment:	
Construction (average)	360 workers (average per month)
Operation	164 workers
Secondary Impacts (Indirect and Induced)	
Construction	314 workers
	$13,021,074
	$39,815,155
Operation (Phase 2):	
Employment	77 workers
Income	$3,410,893
Output	$9,984,482
Estimated Payroll (three-county area of Imperial, San Diego, and Riverside Counties):	
Construction	$42.1 million total
Operation	$8,924,810 annually
Estimated Sales Taxes:	
Construction	$623,100
Operation	$387,500 annually
Existing Unemployment Rate	25.1% in March 2009 for Imperial County (not seasonally adjusted) and 11.5% in March 2009 for California (not seasonally adjusted)
Percent Minority Population (6 mile radius)	81.27%
Percent Poverty Population (6 mile radius)	11%

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table General Note: Table 4-57 uses 2008 dollars for total project costs. Construction would be for 40 months and the project's life is planned for 40 years. Unemployment information is for Imperial County. Population is for a 6-mile radius from the power plant.

4.13.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alterative would result in short- and long-term socioeconomic impacts very similar to the impacts described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site and would include the construction and operation of slightly fewer SunCatchers compared to the IVS project. As a result, the socioeconomic effects associated with the construction, operation, and decommissioning of the Agency Preferred Alternative would be very similar to those impacts under the IVS project.

The impacts of the four applicant-proposed modifications related to socioeconomics would be the same under the Agency Preferred Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.13.4.3 300 MW Alternative

Similar to the IVS project, the 300 MW Alternative would not adversely impact socioeconomic resources. With an approximately 60 percent reduction in the project compared to the IVS project, any socioeconomic impact would also be proportionately less. Construction activities would be reduced, resulting in a shorter overall construction schedule, fewer tax benefits to local governments, and less local spending. Similar to the IVS project, no substantial adverse impacts would result from construction and operation of the 300 MW Alternative. The benefits of the IVS project to the local economy would be somewhat reduced due to the smaller scale of the 300 MW Alternative compared to the IVS project.

The impacts of the four applicant-proposed modifications related to socioeconomics would be the same under the 300 MW Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.13.4.4 Drainage Avoidance #1 Alternative

The impacts of the Drainage Avoidance #1 Alternative would be very similar to impacts of the IVS project, but slightly reduced due to the smaller number of SunCatchers under Drainage Avoidance #1 Alternative. Construction activities would be reduced, resulting in a shorter overall construction schedule, fewer tax benefits to local governments, and less local spending. Similar to the IVS project, no substantial adverse impacts would result from construction, operation, or decommissioning of the Drainage Avoidance #1 Alternative. The benefits of the IVS project to

the local economy would be somewhat reduced due to the smaller scale of the project under the Drainage Avoidance #1 Alternative.

The impacts of the four applicant-proposed modifications related to socioeconomics would be the same under the Drainage Avoidance #1 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.13.4.5 Drainage Avoidance #2 Alternative

The impacts of the Drainage Avoidance #2 Alternative would be very similar to impacts of the IVS project, but slightly reduced due to the smaller number of SunCatchers under the Drainage Avoidance #2 Alternative. Construction activities would be reduced, resulting in a shorter overall construction schedule, fewer tax benefits to local governments, and less local spending. Similar to the IVS project, no substantial adverse impacts would result from construction, operation, or decommissioning of the Drainage Avoidance #2 Alternative. The benefits of the IVS project to the local economy would be somewhat reduced due to the smaller scale of the project under the Drainage Avoidance #2 Alternative.

The impacts of the four applicant-proposed modifications related to socioeconomics would be the same under the Drainage Avoidance #2 Alternative as described earlier for the IVS project because this alternative would result in construction and operation activities similar to the IVS project relative to those four proposed modifications.

4.13.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant and would not amend the *California Desert Conservation Area Plan* (CDCA Plan; 1980, as amended). As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing land use designation for the site in the CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the construction or operation benefits of the IVS project would occur under this No Action Alternative. However, the site would become available to other uses that are consistent with the CDCA Plan and those uses may or may not provide the types of benefits

that would occur under a solar Build Alternative. In addition, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects would be expected to have similar impacts in other locations.

4.13.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grant and would also amend the CDCA Plan to make the IVS project site unavailable for future solar development. As a result, no solar energy project would be constructed on the site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended to make the site unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the construction or operation benefits of the IVS project would occur under this No Action Alternative. However, the site would become available to other uses that are consistent with the CDCA Plan and those uses may or may not provide the types of benefits that would occur under a solar Build Alternative. In addition, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects would be expected to have similar impacts in other locations.

4.13.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant but would amend the CDCA Plan to allow for other solar projects on the IVS project site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, socioeconomic impacts and benefits under this No Action Alternative would be similar to the benefits under the IVS project. As such, this No Action Alternative could result in socioeconomic benefits similar to the benefits under the IVS project.

4.13.5 Cumulative Impacts

Cumulative impacts can occur if implementation of the IVS project could combine with those of other local or regional projects. The geographic extent of cumulative impacts related to socioeconomics is Imperial County. This geographic extent is appropriate because socioeconomic factors such as public services and benefits would be within Imperial County. As stated above, the geographic extent for the labor force would be Imperial, San Diego, Riverside, and San Bernardino Counties. The cumulative projects in this area were described in detail in Section 2.10, Overview of the Cumulative Impacts Analysis. Those projects include seven power plant projects with pending applications at the BLM and three other power projects in Imperial County.

Most of the cumulative projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to socioeconomics less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects.

If all those projects were under construction concurrently, they would require as many as 6,119 construction workers, which represents approximately 2.5 percent of the total construction workforce of 246,545 workers in the El Centro Metropolitan Statistical Area (MSA, in Imperial County), the San Diego-Carlsbad-San Marcos MSA (in San Diego County), and the Riverside-San Bernardino-Ontario MSA (in Riverside and San Bernardino Counties) labor market construction workforce of 246,545. The operational workforce for the cumulative projects is estimated at 760 workers in Imperial County which had an unemployment rate of about 24.5 percent in March 2009 (not seasonally adjusted).

The construction and operation of the cumulative projects and the IVS project could have substantial beneficial public impacts because they would lower the unemployment rate in Imperial County. Other cumulative benefits could include direct impacts of operations and maintenance, payroll, taxes and fees, and associated secondary impacts. In addition, no substantial adverse socioeconomic impacts on housing, schools, emergency medical services, law enforcement, parks and recreation due to an influx of construction or operation workers are anticipated under all the cumulative projects.

As a result, the IVS project is anticipated to contribute to beneficial cumulative socioeconomic effects but would not result in adverse impacts and, therefore, would not contribute to any cumulative adverse socioeconomic impacts in Imperial County.

4.13.6 Mitigation, Project Design Features, and Other Measures

Because the IVS project and the other Build Alternatives will not result in adverse impacts related to socioeconomics, no mitigation, project design features, or other measures are required.

4.13.7 Summary of Impacts

Table 4-58 summarizes the direct, indirect, short- and long term-, and cumulative adverse and beneficial effects of the IVS project, the Agency Preferred Alternative, the other build alternatives, and the No Action Alternatives related to socioeconomics.

As shown in Table 4-58, the construction, operation, and decommissioning of the IVS project would not result in direct, indirect, or cumulative adverse socioeconomic impacts on the study area's housing, schools, parks and recreation, law enforcement, and emergency services.

Table 4-58 Summary of Socioeconomics and Environmental Justice Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	No impacts related to growth, need for new housing, displacement of existing housing and residents, and government facilities and services (emergency medical services, law enforcement, education, recreation facilities). Beneficial effects related to the creation of jobs, and economic effects based on expenditures for the project. Contribution to beneficial cumulative effects but no adverse cumulative effects.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts to growth and no beneficial effects.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts to growth and no beneficial effects.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

4.14 Special Designations

4.14.1 Methodology

The analysis of the effects of the Imperial Valley Solar (IVS) project must comply with National Environmental Policy Act (NEPA) requirements given the United States Bureau of Land Management (BLM) land jurisdiction related to the proposed project. This analysis focuses on whether the IVS project would conflict with the management goals of any applicable special designations.

In addition, a specific farmland impact analysis model (Land Evaluation and Site Assessment [LESA] Model) was used to determine the potential project impacts on farmlands.

4.14.2 Definition of Resource

The special designations considered in this analysis are:

- Wilderness, Areas of Critical Environmental Concern (ACECs), and Special Areas; and
- Agriculture (Farmland).

These resources are described in the following sections.

Because the IVS project site does not have special designations involving certain resources, they will not be discussed further in this section. These resources are:

- Donated lands
- National Wild and Scenic Rivers
- BLM designated range allotments or pastures for wildlife or livestock
- Designated Wilderness Areas

4.14.2.1 Wilderness, Areas of Critical Environmental Concern, and Special Areas

The Wilderness Act of 1964 provided for the establishment of a National Wilderness Preservation System with areas to be designated from public lands. Public lands administered by the BLM were included for wilderness review under the Federal Land Policy and Management Act (FLPMA) of 1976. The Wilderness Act defines Wilderness Areas as follows:

> "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 Act 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."

ACECs are defined in the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended) as follows:

> "An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards."

The CDCA Plan defines Special Areas as:

> "... areas which possess rare, unique, or unusual qualities of scientific, educational, cultural, or recreational significance..."

4.14.2.2 Agriculture (Farmland)

The Natural Resource Conservation Service (NRCS), as a part of the United States Department of Agriculture, provides the following definitions of "Prime Farmland" and "Farmland of Statewide Importance:"

- **Prime Farmland:** Prime Farmland is farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date. Prime Farmland includes areas that have a developed irrigation water supply that is dependable and of adequate quality and areas that do not have such a supply. Only irrigated areas meet the Prime Farmland criteria.

There are no areas in the IVS project site designated as Prime Farmland; however, the site does include land designated as Prime Farmland if Irrigated.

- **Farmland of Statewide Importance:** Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for the production of crops. It must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. It does not include publicly-owned lands for which there is an adopted policy preventing agricultural use.

There is no Farmland of Statewide Importance on the IVS site.

4.14.3 Applicable Regulations, Plans and Policies/Management Goals

4.14.3.1 Wilderness and Areas of Critical Environmental Concern

The CDCA Plan Wilderness Element management goal has the following objectives:

(1) Until congressional release or designation as Wilderness, provide protection of wilderness values so that those values are not degraded so far as to significantly constrain the recommendation with respect to an area's suitability or nonsuitability for preservation as wilderness.

(2) Provide a wilderness system possessing a variety of opportunities for primitive and unconfined types of recreation, involving a diversity of ecosystems and landforms, geographically distributed throughout the desert.

(3) Manage a wilderness system in an unimpaired state, preserving wilderness values and primitive recreation opportunities, while providing for acceptable use.

For ACECs and Special Areas, the CDCA Plan provides the following management goals:

(1) Identify and protect the significant natural and cultural resources requiring special management attention found on the BLM-administered lands in the CDCA.

(2) Provide for other uses in the designated areas, compatible with the protection and enhancement of the significant natural and cultural resources.

(3) Systematically monitor the preservation of the significant natural and cultural resources on BLM-administered lands, and the compatibility of other allowed uses with these resources.

4.14.3.2 Farmland

Farmland Protection Policy Act, 59 FR 31110

In response to a concern that the Nation's farmland was being converted from actual or potential agricultural use, Congress directed federal agencies to identify and consider the adverse effects of federal programs on the preservation of farmland. (Subtitle I, sections 1539-1549, of Title XV of the Agriculture and Food Act of 1981, Public Law 98-98, 7 U.S.C. 4201-4209.) The Farmland Protection and Preservation Act (FPPA directs federal agencies to consider alternative actions that could lessen adverse effects and assure that federal programs, to the extent practicable, are compatible with state government, local government, and private programs and policies to protect farmland. In order to assist federal agencies in the implementation of the FPPA, section 1541(a) of the Act, 7 U.S.C. 4202(a), the Department of Agriculture (DOA), in cooperation with other departments and agencies of the federal government, were directed to "develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses." These criteria are found at 7 CFR 658.4, 658.5, and 658.7 Section 1542 of the FPPA, 7 U.S.C. 4203, also requires that each department and agency of the Federal Government review its laws, administrative rules, policies and procedures "to determine whether any provision thereof will prevent" the federal entity "from taking appropriate action to comply fully" with the FPPA, and to "develop proposals for action to

bring its programs, authorities, and administrative activities into conformity with the purpose and policy" of the FPPA.

The Federal Farmland Protection Policy Act (FPPA, Subtitle I of Title XV, Sections 1539–1549 of the Agriculture and Food Act of 1981) states the following:

> "The FPPA is intended to minimize the impact [F]ederal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that—to the extent possible—[F]ederal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every 2 years. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land."

Further, Section 658.1 of this Federal statute states the following:

> "As required by Section 1541(b) of the [Farmland Protection Policy] Act, 7 United States Code (USC) 4202(b), Federal agencies are (a) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with State and units of local government and private programs and policies to protect farmland."

According to the Act, a federal agency is not expressly required to modify any project solely to avoid or minimize the effects of conversion of farmland to nonagricultural uses. However, the Act requires that, before taking or approving any action that would result in conversion of farmland as defined by the FPPA, the federal agency examine the effects of that action using the DOA criteria and, if there are adverse effects, to consider alternatives to lessen those effects. Once the agency has completed this examination, it may proceed with a project that would convert farmland to nonagricultural uses. (59 Fed.Reg.31110 (June 17, 1994).)

The FPPA regulations were promulgated principally to enable federal agencies, with the help of the NRCS, to measure the adverse effects, if any, of their programs and projects on farmland. The NRCS has developed a Farmland Conversion Impact Rating Form, Form AD-1006, for this purpose. A federal agency considering a project on or affecting farmland completes and submits a Form AD-1006 to a local NRCS office. The NRCS determines if the proposed site or sites

contain farmland subject to the FPPA, i.e., farmland that is "prime," "unique," or of "statewide or local importance," as defined by the FPPA. If NRCS determines that the site or sites are not subject to the Act, NRCS returns the form to the agency with that determination noted. However, if NRCS determines that the FPPA applies, NRCS measures the "relative value" of the site or sites as farmland on a scale of 0 to 100, enters this score on the Form AD-1006 and returns the form to the federal agency. At this stage, the agency prepares a site assessment using twelve criteria set forth in the rule. After scoring each of the criteria and arriving at a total site assessment score, up to a maximum of 160 points, the agency adds this site assessment score to the "relative value" score that was supplied by the NRCS on the Form AD-1006. The higher the combined score, the more suitable the site would be for protection as farmland. On the other hand, if a site receives a combined score of less than 160 points, the regulation recommends that it be given only "a minimal level of consideration for protection" and that additional sites do not need to be evaluated as alternatives. A Land Evaluation and Site Assessment (LESA) system was used to evaluate and score the farmlands in lieu of Form AD-1006 for each Build Alternative as allowed by NRCS. The LESA results were included in Appendix ALTS-1 – LESA Model Worksheets in the SA/DEIS. This is explained in greater detail later in Section 4.14.4.1, IVS Project: 750 MW Alternative.

4.14.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.14.4.1 IVS Project: 750 MW Alternative

Wilderness, Areas of Critical Environmental Concern, and Special Areas

The IVS project site is not in or adjacent to any designated Wilderness Area. The Jacumba Mountains Wilderness is approximately 4 miles (mi) southwest of the IVS project site, and the Coyote Mountains Wilderness is approximately 7 mi northwest of the IVS project site. Therefore,

the IVS project would not affect any designated Wilderness Areas or otherwise conflict with the management goals established for Wilderness Areas in the CDCA Plan.

The Yuha Desert ACEC is directly south of Interstate 8 (I-8), and the IVS project site is north of I-8. The CDCA Plan identifies the 40,000-acre (ac) Yuha Desert ACEC as possessing prehistoric/historic and special wildlife values. The proposed IVS project will not take any land from the Yuha Desert ACEC and, because it is across I-8, it is not expected to adversely affect this ACEC in the context of its special land use designation. However, the proposed transmission line would traverse the Yuha Desert ACEC near and parallel to the existing alignment for the Southwest Powerlink transmission line. Resources in this ACEC include cultural and biological resources. Measures to avoid and/or reduce project impacts to these resources are provided in Sections 4.5 and 4.3, respectively.

Other than potential effects to the Juan Bautista de Anza National Historic Trail (Anza Trail) on and immediately adjacent to the IVS project site, the IVS project would not impact the Yuha Desert ACEC. Refer to Sections 3.5, 3.14, 3.16, 4.5, 4.14, and 4.16 for specific discussion regarding the identified values in the Yuha Desert ACEC and how the IVS project may or may not affect those values.

There are no designated Special Areas on or in the vicinity of the IVS project site. Therefore, the IVS project, the Preferred Agency Alternative, the other Build Alternatives, and the No Action Alternatives will not impact any designated Special Areas.

Farmland

Multiple governmental agencies at the Federal, State, and local level have information regarding agricultural lands on and in the vicinity of the IVS project site. The following are the various designations or categorizations of agricultural land on and in the vicinity of the IVS project site:

- **California Department of Conservation (DOC):** Under the Farmland Mapping and Monitoring Program (FMMP) mapping criteria, approximately 30 percent of the IVS project site has been mapped as “Other Land.” The rest of the site has not been surveyed by the DOC.

- **United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS):** As discussed in Section 3.14, 1,931 ac (approximately 30 percent) of the IVS project site have been surveyed by the NRCS. According to the NRCS Web Soil Survey (WSS), approximately 74 percent of the surveyed part of the IVS project site is designated as Farmland of Statewide

Importance and another approximately 25 percent is designated as Prime Farmland if Irrigated.

- **Williamson Act:** None of the IVS project site is under a Williamson Act contract.

The DOC FMMP mapping information is used to analyze impacts to important farmlands (i.e., Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) in the State. The FMMP designation for the IVS project site is "Other Land," which is a designation used for land that is not included in any other mapping category, such as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance.

Analysis of the potential impacts of the IVS project on agricultural land was conducted using the LESA Model. Although not necessarily required by NEPA, the LESA Model is a widely accepted tool that assesses the potential impacts to agricultural lands, particularly in the State of California. LESA is a term used to define an approach for rating the relative quality of land resources based on specific measurable features. The development of the California Agricultural LESA Model is the result of Senate Bill 850 (Statutes 1993, Chapter 812, Section 3) and is intended "…to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code [PRC] Section 21095).

The California Agricultural LESA Model is composed of six different factors. Two "Land Evaluation" (LE) factors are based on measures of soil resource quality. Four "Site Assessment" (SA) factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100-point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a level of project impacts, based on the established scoring range.

The LESA Model was used to analyze the IVS project site in accordance with the detailed instructions in the LESA Model Instruction Manual. However, because the entire IVS project site has not been surveyed by the NRCS, the LESA Model score is based only on the surveyed parts of the IVS project site.

The LESA score is based on a scale of 0 to 100. The final LESA score for the IVS project site is 30.95. Because the LESA Model was developed for use in California, it describes the scores in the context of specific thresholds and levels of significance. However, NEPA does not use thresholds and levels of significance in assessing project impacts. Nonetheless, the findings of

the LESA analysis can be used to assess the level of project impacts on agricultural resources under NEPA. Based on the California Agricultural LESA thresholds,[1] a score of 30.95 would not result in adverse effects due to the permanent conversion of 1,931 ac of farmland. As a result, the conversion of agricultural land to nonagricultural uses under the IVS project would not be considered to be an adverse impact under NEPA. The completed LESA Model worksheets for the IVS project are provided in Appendix LU-1 in the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS; 2010).

Further, the IVS project would be consistent with the FPPA in that the proposed project will not result in unnecessary and irreversible conversion of farmland to nonagricultural uses.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply will not result in differences in impacts related to special designations compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

4.14.4.2 709 MW Alternative: Agency Preferred Alternative

Wilderness, Areas of Critical Environmental Concern, and Special Areas

As discussed in the previous section for the IVS project, there are no Wilderness Areas or Special Areas on or in the vicinity of the IVS project site. Therefore, the Agency Preferred Alternative will not result in any impacts to those types of resources.

The transmission line in the Agency Preferred Alternative will cross the Yuha Desert ACEC on the same alignment as under the IVS project. Therefore, the Agency Preferred Alternative would impact the Anza Trail and the Yuha Desert ACEC the same as under the IVS project. The impacts of the Agency Preferred Alternative on biological and cultural resources associated with the Anza Trail and the Yuha Desert ACEC would be mitigated based on the measures provided in Sections 4.5 and 4.3, for cultural and biological resources, respectively.

[1] California LESA Model Scoring Thresholds (DOC 1997, Table 9): 0 to 39 points = Not Considered Significant; 40 to 59 points = Considered Significant (only if LE and SA subscores are each greater than or equal to 20 points); 60 to 79 points = Considered Significant (unless either LE or SA subscore is less than 20 points); 80 to 100 points = Considered Significant.

The applicant proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Agency Preferred Alternative will not result in differences in impacts related to the Yuha Desert ACEC and the Anza Trail compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

Farmland

As discussed in the previous section for the IVS project, the conversion of designated agricultural land to nonagricultural uses is not considered to be an adverse impact under NEPA. Because the Agency Preferred Alternative would affect nearly the same amount of designated agricultural land, it is also considered not to result in an adverse impact under NEPA.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Agency Preferred Alternative will not result in differences in impacts related to the conversion of agricultural land to nonagricultural uses compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

4.14.4.3 300 MW Alternative

Wilderness, Areas of Critical Environmental Concern, and Special Areas

The 300 Megawatt (MW) Alternative is proposed for the same site as the IVS project, but using less acreage. As a result, the 300 MW Alternative would also not result in adverse impacts to or conflict with any management goals related to any Wilderness Areas or Special Areas.

The transmission line in the 300 MW Alternative will cross the Yuha Desert ACEC on the same alignment as under the IVS project. Therefore, the 300 MW Alternative would impact the Anza Trail and the Yuha Desert ACEC the same as under the IVS project. The impacts of the 300 MW Alternative on biological and cultural resources associated with the Anza Trail and the Yuha Desert ACEC would be mitigated based on the measures provided in Sections 4.5 and 4.3 for cultural and biological resources, respectively.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in

differences in impacts related to the Yuha Desert ACEC and the Anza Trail compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

Farmland

Because the 300 MW Alternative would use only 2,600 ac (40 percent) of the IVS project site, it would result in conversion of fewer acres of designated agricultural land to nonagricultural uses. Therefore, the 300 MW Alternative would result in reduced impacts to designated farmland compared to the IVS project.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in differences in impacts related to the conversion of agricultural land to nonagricultural uses compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

4.14.4.4 Drainage Avoidance #1 Alternative

Wilderness, Areas of Critical Environmental Concern, and Special Areas

The Drainage Avoidance #1 Alternative is proposed for the same site as the IVS project, but using less acreage. As a result, the Drainage Avoidance #1 Alternative would also not result in adverse impacts to or in conflict with any management goals related to any Wilderness Areas or Special Areas.

The transmission line in the Drainage Avoidance #1 Alternative will cross the Yuha Desert ACEC on the same alignment as under the IVS project. Therefore, the Drainage Avoidance #1 Alternative would impact the Anza Trail and the Yuha Desert ACEC the same as under the IVS project. The impacts of the Drainage Avoidance #1 Alternative on biological and cultural resources associated with the Anza Trail and the Yuha Desert ACEC would be mitigated based on the measures provided in Sections 4.5 and 4.3 for cultural and biological resources, respectively.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #1 Alternative will not

result in differences in impacts related to the Yuha Desert ACEC and the Anza Trail compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

Farmland

Because the Drainage Avoidance #1 Alternative would use only 4,690 ac (72 percent) of the IVS project site, it would result in the conversion of fewer acres of designated agricultural land to nonagricultural uses. Therefore, the Drainage Avoidance #1 Alternative would result in reduced impacts to designated farmland compared to the IVS project.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #1 Alternative will not result in differences in impacts related to the conversion of agricultural land to nonagricultural uses compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

4.14.4.5 Drainage Avoidance #2 Alternative

Wilderness, Areas of Critical Environmental Concern, and Special Areas

The Drainage Avoidance #2 Alternative is proposed for the same site as the IVS project, but using less acreage. As a result, the Drainage Avoidance #2 Alternative would also not result in adverse impacts to or in conflict with any management goals related to any Wilderness Areas, Special Areas, or ACECs.

The transmission line in the Drainage Avoidance #2 Alternative will cross the Yuha Desert ACEC on the same alignment as under the IVS project. Therefore, this alternative would impact the Anza Trail and the Yuha Desert ACEC the same as under the IVS project. The impacts of the Drainage Avoidance #2 Alternative on biological and cultural resources associated with the Anza Trail and the Yuha Desert ACEC would be mitigated based on the measures provided in Sections 4.5 and 4.3, for cultural and biological resources, respectively.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #2 Alternative will not result in differences in impacts related to the Yuha Desert ACEC and the Anza Trail compared

to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

Farmland

Because the Drainage Avoidance #2 Alternative would use only 3,153 ac (49 percent) of the IVS project site, it would result in the conversion of fewer acres of designated agricultural land to nonagricultural uses. Therefore, the Drainage Avoidance #2 Alternative would result in reduced impacts to designated farmland compared to the IVS project.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #2 Alternative will not result in differences in impacts related to the conversion of agricultural land to nonagricultural uses compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and be in the same general locations as these facilities as evaluated for the original IVS project.

4.14.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the proposed IVS project would not be approved by the BLM, and BLM would not execute a right-of-way (ROW) grant or amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing CDCA Plan.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance. As a result, this No Action Alternative would not result in any impacts to Wilderness Areas, Special Areas, ACECs, or designated agricultural lands. Although the IVS project site could be developed in other uses consistent with the CDCA Plan, they would likely not result in impacts related to Wilderness Areas, Special Areas, or ACECs, but those uses could result in the conversion of agricultural land on the IVS project site to nonagricultural uses. In addition, under this No Action Alternative, other renewable energy projects may be developed on other sites to meet State and Federal mandates, and those projects could have similar impacts in other locations.

4.14.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the proposed IVS project would not be approved by the BLM, and the BLM would not execute a ROW grant. However, the BLM would amend the CDCA Plan to prohibit any solar projects on the site. As a result, the site would remain as it currently exists. Because there would be no solar project on the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance, and would continue to be managed consistent with the CDCA Plan. As a result, this No Action Alternative would not impact Wilderness Areas, Special Areas, ACECs, or designated agricultural lands. Although the IVS project site could be developed in other uses consistent with the CDCA Plan under this No Action Alternative, those uses would likely not result in impacts related to Wilderness Areas, Special Areas, or ACECs, but those uses could result in the conversion of agricultural land on the IVS project site to nonagricultural uses. In addition, under this No Action Alternative, other renewable energy projects may be developed on other sites to meet State and Federal mandates, and those projects could have similar impacts in other locations.

4.14.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the proposed IVS project would not be approved by the BLM, and the BLM would not execute a ROW grant. However, the BLM would amend the CDCA Plan to allow future solar projects on the IVS project site. As a result, the site would remain as it currently exists until such time as the BLM receives a ROW grant application for another solar project on the site. Until such time, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no land disturbance, and would continue to be managed consistent with the CDCA Plan. In either case, similar to the IVS project, this No Action Alternative would not result in any impacts to Wilderness Areas, Special Areas, or ACECs, but could result in the conversion of agricultural land on the IVS project site to nonagricultural uses.

4.14.5 Cumulative Impacts

The IVS project, Agency Preferred Alternative, and the other Build Alternatives will all result in the permanent conversion of designated agricultural lands to nonagricultural uses. This is an unavoidable adverse impact of those alternatives. Other projects described in Section 2.10, Overview of the Cumulative Impacts Analysis, would also result in the permanent conversion of

agricultural lands to nonagricultural uses. Most of the cumulative projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to the conversion of agricultural land to nonagricultural uses less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects. As a result, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will contribute to cumulative unavoidable adverse impacts related to the permanent conversion of agricultural lands to nonagricultural uses.

The IVS project, the Agency Preferred Alternative, and the other Build Alternatives will all result in adverse impacts to the Yuha Desert ACEC and the Anza Trail. The other cumulative projects may result in result in adverse impacts to the Yuha Desert ACEC and/or the Anza Trail, less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects. As a result, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will contribute to cumulative adverse impacts to the Yuha Desert ACEC and the Anza Trail.

Because the IVS project, the Agency Preferred Alternative, and the Build Alternatives would not have impacts on Wilderness Areas or Special Areas, the project would not contribute to cumulative impacts on any resources with these special designations.

4.14.6 Mitigation, Project Design Features, and Other Measures

The IVS project and the other Build Alternatives would not result in impacts to Wilderness Areas or Special Areas. Therefore, no mitigation is required.

The IVS project and the other Build Alternatives will result in adverse impacts to the Yuha Desert ACEC and the Anza Trail. Impacts to biological and cultural resources associated with the Yuha Desert ACEC and the Anza Trail would be mitigated based on the measures provided in Sections 4.3 and 4.5 for biological and cultural resources, respectively.

The IVS project and the other Build Alternatives would result in the conversion of designated agricultural land on the IVS project site to nonagricultural uses. There is no mitigation identified to avoid or minimize this impact.

4.14.7 Summary of Impacts

Table 4-59 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to special designations.

As shown in Table 4-59, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would not result in any unavoidable adverse impacts related to Wilderness Areas, Special Areas, and designated agricultural lands.

Table 4-59 Summary of Special Designations Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas. Conversion of designated agricultural land to nonagricultural uses; not considered an adverse impact.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #2 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas. Would not result in the conversion of less designated agricultural land to nonagricultural uses.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas. Would not result in the conversion of designated agricultural land to nonagricultural uses.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not expected to impact Wilderness Areas, Areas of Environmental Concern or Special Areas. May result in the conversion of less designated agricultural land to nonagricultural uses; not considered an adverse impact.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

4.15 Traffic and Transportation

The direct and indirect impacts of the proposed Imperial Valley Solar (IVS) project on the transportation system in the vicinity of the project site are discussed in this section. The assessment of transportation-related impacts is based on evaluations and technical analysis comparing the pre-IVS project conditions to the post-IVS project conditions.

4.15.1 Methodology

4.15.1.1 Overview

The potential traffic Impacts of the IVS project were assessed for two separate future year scenarios: construction year (2010) and IVS project opening year (2017). The IVS project would generate approximately 10 times more daily traffic during the peak construction period than during operation. Traffic during the decommissioning period would be expected at a level between those during operation and construction, and likely closer to the operation levels.

The existing traffic volumes were increased to account for future growth in background traffic volumes unrelated to the IVS project, based on input from the Imperial County Traffic Engineer and consistent with other studies in the area. Other planned projects in the vicinity of the IVS project site were determined to contribute to both 2010 and 2017 traffic levels; therefore, trips from those planned projects were added to the future traffic volumes for those years.

The direct and indirect impacts of the IVS project are addressed for the modes of travel described in Section 3.15, Traffic and Transportation.

The levels of service (LOSs) applicable to the study area roads are:

- LOS D or better conditions on State of California highways
- LOS C or better conditions on an Imperial County roadways

The National Environmental Policy Act (NEPA) does not provide any standards specific to transportation. This analysis is in accordance with 40 Code of Federal Regulations (CFR) Section 1502.15 for the project effects on traffic and transportation issues. For this analysis, the IVS project was determined to result in adverse traffic impacts if it causes intersection operations to exceed the accepted LOS standards on a State or County road or if it is

incompatible with the applicable laws, ordinances, regulations and standards (LORS) related to traffic and transportation.

4.15.1.2 Construction Impacts

The potential traffic impacts associated with construction of the IVS project were evaluated for construction workforce traffic and construction truck traffic.

To determine the amount of construction workforce vehicle trips to the IVS project site during peak construction, it was assumed that workers would commute alone during the morning and afternoon peak intervals (7 to 9 AM and 4 to 6 PM). The average number of construction workers during the peak one month period was used for that analysis.

Based on regional demographics and the availability of skilled laborers, it is expected that 90 percent of the construction employees would reside in southern California. During construction, it is anticipated that construction workers and technical workers would reside in temporary housing or apartments during the week. The temporary housing is expected to be in the El Centro area.

To reach the IVS project site, it was assumed construction workers traveling from the east and west would primarily use I-8 (65 percent from the east and 15 percent from the west). The remaining trips would use Evan Hewes Highway, with 15 percent traveling from the east and 5 percent traveling from the west. These are reasonable assumptions because they are the most direct routes to the IVS project site.

The total peak construction traffic (workforce and trucks) was estimated per peak hour. The peak construction increase in traffic was compared to existing volumes on the study area roads. The peak hour levels of service (LOS) were compared to existing LOSs.

The analysis of potential construction related impacts also considered the following:

- Impacts on road surfaces
- Impacts relate to parking availability and capacity
- Impacts related to emergency services access
- Impacts related to water, rail, and air traffic facilities and services
- Transport of hazardous materials

4.15.1.3 Operation Impacts

The analysis of the project operations analyzed the same potential types of impacts as for construction impacts, related to the effects of operations related vehicle traffic on the LOS on area roads; parking availability and capacity; emergency services access; water, rail and air traffic facilities and services; and the transport of hazardous materials.

4.15.2 Definition of Resource

The traffic and transportation system evaluated here includes consideration of:

- Paved and unpaved roads of varying classifications on and in the vicinity of the project site as described in detail in Section 3.15, Traffic and Transportation
- Parking availability and capacity
- Emergency services access
- Water, rail, and air traffic
- Transport of hazardous materials

4.15.3 Applicable Regulations, Plans, and Policies/Management Goals

The conformance of the IVS project with the transportation LORS is provided in Table 4-60.

4.15.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

Table 4-60 Traffic and Transportation Laws, Ordinances, Regulations, and Standards Compliance

Applicable LORS	Description
Federal	
Code of Federal Regulations Part 77, Federal Aviation Administration Regulations	Implements standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the FAA of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace. **Consistent:** The IVS project is not located within 20,000 feet of an airport.
Code of Federal Regulations Title 49, Sections 171-177, Sections 350-399 and Appendices A-G	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles who operate on public highways. **Consistent:** Enforcement is conducted by state and local law enforcement agencies, and through state agency licensing and ministerial permitting (e.g., California Department of Motor Vehicles licensing, Caltrans permits), and/or local agency permitting (e.g., County of Imperial). HAZ-3 requires the owner to develop and implement a Safety Management Plan related to hazardous materials.
State	
California Vehicle Code Division 2, Chapter 2.5, Division 6, Chapter 7, Division 13, Chapter 5, Division 14.1, Chapter 1 and 2, Division 14.8, Division 15	Includes regulations pertaining to licensing, size, weight and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials. **Consistent:** Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting, and/or local agency permitting.
California Streets and Highways Code Division 1 and 2, Chapter 3 and Chapter 5.5	Includes regulations for the care and protection of State and County highways, and provisions for the issuance of written permits. **Consistent:** Enforcement is provided by state and local law enforcement, and through ministerial state agency licensing and permitting, and/or local agency permitting.
Local	
County of Imperial General Plan Circulation and Scenic Highways Element	Requires that developments contribute positively to the County's transportation network and that negative impacts are reduced. For example, requirements include new developments provide local roads to serve the needs of the development, future construction does not interfere with present and potential highway and right-of-way needs, and

Applicable LORS	Description
	freight loading/unloading does not occur on public roadways. In addition, construction of private streets in developments is allowed. **Consistent:** The IVS project is consistent because it includes paved access to County roadways, provides off-street parking for new development, ensures LOS C conditions or better on the applicable local roads, and provides on-site freight loading/unloading. In addition, the IVS project is consistent as it provides internal (private) roadways for on-site access.

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

4.15.4.1 IVS Project: 750 MW Alternative

Construction Impacts

Traffic Impacts

To determine the amount of construction workforce vehicle trips to the IVS project site during peak construction, it was assumed that workers would commute alone during the morning and afternoon peak intervals (7 to 9 AM and 4 to 6 PM). The average number of construction workers for the IVS project would be approximately 731 during the peak one month period (expected to occur at month seven of the 40 month construction schedule).

The total peak construction traffic (workforce and trucks) for the IVS project would be 758 vehicle trips (731 workers plus 27 trucks) per peak hour. The peak construction increase in traffic would represent a noticeable change when compared to existing conditions, particularly on Dunaway Road between the IVS project site driveway and I-8. Traffic volumes would increase from existing daily traffic volume of 780 vehicles to 2,240 vehicles during the construction year. While the percentage increase is substantial, the road would not be congested because as the road capacity is approximately 10,000 vehicles per day (vpd).

Table 4-61 identifies the expected change in daily traffic volumes on the study area roads during the peak construction period for the IVS project.

Table 4-62 summarizes the level of service (LOS) on the study area road segments in 2010 with and without the IVS project construction traffic.

Table 4-61 Comparison of Construction Year 2010 Traffic on Study Area Roads

Roadway Segment	Existing ADT	2010 ADT w/o Project	2010 ADT with Project	Percent Change Associated with Project
I-8 west of Imperial Highway	15,300	16,830	17,245	3%
I-8 east of Dunaway Road	13,400	14,740	15,940	8%
SR-98 west of Imperial Highway	1,500	1,575	1,590	1%
Imperial Highway: north of SR-98	315	330	365	11%
Evan Hewes Highway east of Imperial Highway	1,250	1,300	1,535	18%
Evan Hewes Highway west of Dunaway Road	515	535	1,170	119%
Dunaway Road: north of I-8 westbound ramps	780	810	2,240	176%

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: ADT = average daily traffic; I-8 = Interstate 8; SR-98 = State Route 98.

Table 4-62 Construction Year (2010) Road Segment Levels of Service

Roadway Segment	Existing ADT	Existing LOS	2010 w/o Project ADT	2010 w/o Project LOS	2010 with Project ADT	2010 with Project LOS
I-8 west of Imperial Highway	15,300	A	16,830	A	17,245	A
I-8 east of Dunaway Road	13,400	A	14,740	A	15,940	A
SR-98 west of Imperial Highway	1,500	A	1,575	A	1,590	A
Imperial Highway north of SR-98	315	A	330	A	365	A
Evan Hewes Highway east of Imperial Highway	1,250	A	1,300	A	1,535	A
Evan Hewes Highway west of Dunaway Road	515	A	535	A	1,170	A
Dunaway Road north of I-8 westbound ramps	780	A	810	A	2,240	B

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: ADT = average daily traffic; I-8 = Interstate 8; LOS = level of service; SR-98 = State Route 98.

While traffic volumes would increase during the construction period, the LOS at the study area intersections and road segments would remain within the accepted LOSs identified by the local jurisdictions. All study area road segments and intersections are expected to operate at LOS C

or better with the IVS project–related construction traffic as shown in Table 4-63. Therefore, impacts from the IVS project–related construction traffic would not be adverse.

The vehicular delay shown in Table 4-63 for each intersection is based on multiple factors, including peak hour traffic volumes, arrival patterns, lane configurations, etc. The outcome of the calculation is based on the volume of each and is reported in seconds per vehicle. In some instances, the delay for the intersection may improve with the addition of traffic volumes, because the outcome is weighted based on the volume of individual movements.

While the construction of the IVS project would not create adverse impacts with respect to traffic congestion, it would create unusual traffic conditions that may be hazardous, such as the delivery of oversized equipment. To mitigate these potential hazards, Measure TRANS-1 requires the development and implementation of a traffic control plan during construction.

Construction of the IVS project would require the use of heavy equipment for the installation of associated systems and structures. Heavy equipment would be used throughout the construction period, including trenching and earthmoving equipment, forklifts, cranes, cement mixers and drilling equipment. However, this heavy equipment would be delivered to the project site by non-IVS project employees and, therefore, has been separately added to the IVS project construction related trip generation. The IVS project construction is expected to require 2,198 truck trips (a truck trip is defined as one one-way trip either to or from the site) per month (24 working days) during the peak month. It has been estimated that 30 percent of those truck trips would arrive/depart during the peak hours of adjacent street traffic.

The IVS project would generate a substantial level of overall traffic and heavy-vehicle traffic during construction. In particular, heavy vehicles have the potential to damage the surfaces of local roads. Measure TRANS-3 requires the applicant to document before/after conditions on local roads and to repair any damage caused by IVS project-related construction vehicle traffic.

Parking Capacity Impacts

Construction parking would be accommodated at the approximately 100 acre laydown area adjacent to the IVS project site. Although the IVS project site is west of Dunaway Road and south of Evan Hewes Highway, the construction parking would be provided on the laydown area immediately east of Dunaway Road. All parking for the construction workforce would be on this off-site, off-street staging area. Workers would be bused across Dunaway Road into the IVS project site. With this off-site construction parking area, the IVS project construction would not result in any parking spill-over to sensitive areas and would not create an adverse impact related to parking.

Table 4-63 Construction Year 2010 Intersection Level of Service Summary

Study Intersection	Existing AM Peak Delay	Existing AM Peak LOS	Existing PM Peak Delay	Existing PM Peak LOS	2010 without Project AM Peak Delay	2010 without Project AM Peak LOS	2010 without Project PM Peak Delay	2010 without Project PM Peak LOS	2010 with Project AM Peak Delay	2010 with Project AM Peak LOS	2010 with Project PM Peak Delay	2010 with Project PM Peak LOS
I-8 WB Ramp/ Imperial Hwy	1.7	A	3.3	A	1.7	A	3.3	A	1.6	A	1.1	A
I-8 EB Ramp/ Imperial Hwy	5.6	A	3.3	A	5.6	A	3.3	A	5.1	A	2.7	A
SR-98/Imperial Hwy	0.7	A	0.8	A	0.9	A	0.8	A	1.3	A	1.6	A
I-8 WB Ramp/ Dunaway Rd	2.5	A	1.9	A	2.6	A	2.1	A	15.3	C	0.2	A
I-8 EB Ramp/ Dunaway Rd	6.9	A	7.4	A	6.9	A	6.9	A	9.6	A	8.8	A

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table General Note: Average delay reported in seconds per vehicle. All study intersections are unsignalized.

Table Key: EB = eastbound; I-8 = Interstate 8; Hwy = Highway; LOS = level of service; Rd = Road; SR-98 = State Route 98; WB = westbound.

Emergency Services Vehicle Access

The environmental review of emergency service vehicle access considers the off-site accessibility by emergency vehicles to the site. Regional access to the IVS project site is adequate given that an emergency vehicle can access the site directly from Evan Hewes Highway or Dunaway Road, with direct access to/from I-8. Emergency vehicles can approach the site from adjacent cities using different routes and would not be barred from access due to a singular problem on a surrounding road. Therefore, the emergency vehicle access for the IVS project during construction is considered adequate.

On-site circulation of emergency vehicles is subject to site plan review by local agencies (Imperial County, in this case) and the standards of the Uniform Fire Code and Uniform Building Code.

Water, Rail, and Air Traffic

Water Traffic

The IVS project site is adjacent to a navigable body of water. Therefore, the IVS project construction would not affect water-related transportation.

Rail Traffic

The IVS project proposes to construct a private crossing of an existing railroad line as part of its primary access. The rail line is controlled by a subsidiary of the San Diego Metropolitan Transit System (MTS) and operated as a private transit system. Therefore, that line is not subject to Public Utilities Commission (PUC) authority. This rail line is currently not providing any service due to needed track repairs and upgrades. However, there is the potential for rail/vehicle conflicts in the future when rail service re-opens.

The applicant has negotiated a lease agreement[1] with the MTS to provide a private crossing "…located west of Plaster City, south of Evan Hewes Highway at Road 2003 along the Desert Line at approximately Milepost 128.5." That agreement requires the applicant to pay an annual license fee, maintain appropriate insurance, and provide the necessary crossing improvements (not specified). Measure TRANS-2 requires the applicant to provide an executed agreement of

[1] Metropolitan Transit System, San Diego. License to place permanent improvements in MTS/SD&AE Right-of-Way. January 7, 2010. MTS Doc #S200-10-424, ADM 160.1. CEC Doc 08-AFC-5.

the above prior to project construction and to obtain approval from the MTS for the permanent form of the railroad crossing.

Air Traffic

The IVS project construction would not include any concentrated heat rejection source, so there would not be any corresponding turbulence impacts to low flying aircraft.

Transport of Hazardous Materials

The construction of the IVS project would involve the transport of hazardous materials to the site. The transport vehicles will be required to follow Federal regulations governing the proper containment vessels and vehicles, including appropriate identification of the nature of the contents.

Delivery to the site would require vehicles to cross a crossing of a railroad line as part of its primary access. Although this rail line is not currently used, should it become active, either the MTS or applicant (via a revised lease agreement) would need to provide the appropriate railroad crossing warning equipment.

In addition to the governing Federal regulations, Measure HAZ-3 requires the applicant to develop and implement a Safety Management Plan for the delivery of hazardous materials. Refer also to Section 4.1, Public Health and Safety, and Hazardous Materials, for additional discussion regarding hazardous materials.

Applicant-Proposed Modifications

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in traffic and transportation impacts during construction compared to the IVS project as described above. This is because these proposed modifications would be designed similarly to, and constructed in the same general locations, as these facilities as evaluated for the original IVS project.

The alternative water source is not anticipated to appreciably change construction-related impacts to traffic and transportation and would be consistent with the analysis for the original IVS project provided earlier.

As noted above in the discussion of the original IVS project, during the peak months in the project construction schedule, the study area will experience short-term increases in traffic associated primarily with construction worker commute and material and equipment delivery

trips. The traffic analysis for the original IVS project evaluated the worst-case project construction scenario by analyzing the peak months where the combined trip total of worker commute and material and equipment delivery trips is highest. The construction trip generation data in Table 4-64 show the trips that would be generated by construction personnel and delivery trucks including trips associated with the alternative water source. As shown in Table 4-64, the additional trips associated with the alternative water supply would represent only a small percent of the daily construction trips on the peak day.

The analysis for the original IVS project showed that the construction-related traffic in 2010 would not adversely impact the LOS on area roads, with the LOS on those road segments at LOS A or B with the project construction traffic included. The construction-related traffic in 2010 would not adversely impact the LOS at area intersections, with the area intersections all operating at LOS A. The addition of the 13 daily truck round trips between the well site and the IVS project site to the area road segments and intersections would not be sufficient to change the LOS at those road segments and intersections from the LOS estimated for the original IVS project. As a result, the truck trips during construction associated with the alternative water source will not adversely affect the LOS, or result in the degradation of operations, on area roads and intersections.

Operation Impacts

Traffic Impacts

Operation of the facility under the IVS project would require a labor force of up to 164 full-time employees. The estimated peak hour trips would be 100 cars and four vanpool vehicles. Additional non-employee trips are also to be expected, such as eight daily visitor trips, deliveries, and other related services. The non-employee IVS project–related trips have been assumed to occur during the peak hours with 24 during the AM peak hour and 14 during the PM peak hour. It was assumed that the geographic location of housing for operational workers would be similar to those of the construction workers, and therefore, they would access the site in a similar spatial pattern.

Trips added by the IVS project during operations would not deteriorate the LOS of the study area roads or intersections. All study area roads and intersections would operate at LOS B or better with the IVS project-related traffic as discussed below. As a result, the traffic impacts of the IVS project operations traffic would not be adverse.

Table 4-64 Project Construction Trip Generation

Vehicle Type	Peak Daily Round Trips	Morning Peak Inbound Trips	Morning Peak Outbound Trips	Total Morning Peak Trips	Evening Peak Inbound Trips	Evening Peak Outbound Trips	Total Evening Peak Trips
Construction Worker Vehicles (Table Note 1)	1,462	731	0	731	0	731	731
Truck Deliveries (Table Note 2)	274	41	0	41	0	41	41
Offsite Water Supply delivery (Table Note 3)	78	24	0	24	0	24	24
Total Trips	**1,814**	**796**	**--**	**796**	**-**	**796**	**796**
Percent Water Supply Trips are of Total Trips	4.3%	3.0%	--	3.0%	--	3.0%	3.0%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table Note 1: Peak workforce was conservatively analyzed at 731 worker trips conservatively assumed to drive alone during both the morning (0700 to 0900) and evening (1600 to 1800) peak hours.

Table Note 2: Trucks deliveries shown in the table were adjusted into PCE vehicles (3 PCE per month). 1,099 truck trips per month = 3,297 PCEs divided by 24 working days = 137 PCE one-way trips or 274 round trips per day on average. It was also assumed that 30 percent of the truck delivery trips arrive during the morning peak hour and leave during the evening peak hour while the remaining deliveries (70 percent would arrive and leave during off-peak hours.

Table Note 3: Offsite water supply deliveries shown in the table were adjusted into PCE vehicles (3 PCE per truck). 13 truck trips day = 39 PCE one-way trips or 78 round trips per day during peak construction. It was also assumed that 30 percent of the water supply truck delivery trips arrive during the morning peak hour and leave during the evening peak hour while the remaining deliveries (70 percent) would arrive and leave during off-peak hours.

Table Key: PCE = passenger car equivalent.

Table 4-65 compares the expected traffic volumes during standard IVS project operations to the background traffic volumes on the study area road segments in 2017. As shown, the majority of the IVS project-related operations traffic would use the segment of Evan Hewes Highway west of Dunaway Road. However, the average daily traffic volumes are expected to be relatively low for a road with the characteristics of Evan Hewes Highway. As shown, over one-half of the study area road segments are expected to experience an increase in IVS project-related operations traffic of 1 percent or less.

Table 4-66 summarizes the LOS on the study area road segments during standard operations in 2017. As shown, the study area road segments are expected to operate at the same condition, LOS A, as in existing conditions.

Table 4-67 summarizes the LOS for the study area intersections for existing conditions and 2017 conditions, with and without the IVS project during standard operations.

Parking Capacity

On-site parking for standard operations would be accommodated by a paved employee parking lot. The lot would be in the Administrative, Assembly, and Construction Area on the IVS project site. With the on-site parking for operational employees, the IVS project would not result in any parking spill-over to sensitive areas and would not create an adverse impact related to parking.

Emergency Services Vehicle Access

The regional access to the site is adequate given that an emergency vehicle can access the site directly from Evan Hewes Highway or Dunaway Road, with direct access to/from I-8. Emergency vehicles can approach the site from adjacent cities using different routes and would not be barred from access due to a singular problem on a surrounding road. Therefore, the emergency vehicle access during operation of the IVS project is considered adequate.

On-site circulation of emergency vehicles is subject to site plan review by local agencies (Imperial County, in this case) and the standards of the Uniform Fire Code and Uniform Building Code.

Table 4-65 Comparison of Standard Operations 2017 Traffic on Study Area Roads

Roadway Segment	Existing ADT	2017 ADT without Project	2017 ADT with Project	Percent Change Due to Project
I-8 west of Imperial Highway	15,300	19,510	19,550	< 1%
I-8 east of Dunaway Road	13,400	17.085	17,305	1%
SR-98 west of Imperial Highway	1,500	1,875	1,880	< 1%
Imperial Highway north of SR-98	315	395	400	1%
Evan Hewes Highway east of Imperial Highway	1,250	1,565	1,615	3%
Evan Hewes Highway west of Dunaway Road	515	645	880	36%
Dunaway Road north of I-8 westbound ramps	780	975	1,090	12%

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: ADT = average daily traffic; I-8 = Interstate 8; LOS = level of service; SR-98 = State Route 98

Table 4-66 Standard Operations 2017 Road Segment Levels of Service

Roadway Segment	Existing ADT	Existing LOS	2017 without Project ADT	2017 without Project LOS	2017 with Project ADT	2017 with Project LOS
I-8 west of Imperial Highway	15,300	A	19,510	A	19,550	A
I-8 east of Dunaway Road	13,400	A	17,085	A	17,305	A
SR-98 west of Imperial Highway	1,500	A	1,875	A	1,880	A
Imperial Highway north of SR-98	315	A	395	A	400	A
Evan Hewes Highway east of Imperial Highway	1,250	A	1,565	A	1,615	A
Evan Hewes Highway west of Dunaway Road	515	A	645	A	880	A
Dunaway Road north of I-8 westbound ramps	780	A	975	A	1,090	A

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Key: ADT= average daily traffic; I-8 = Interstate 8; LOS = level of service; SR-98 = State Route 98.

Table 4-67 Standard Operations 2017 Intersection Levels of Service

Study Intersection	Existing AM Peak Delay	Existing AM Peak LOS	Existing PM Peak Delay	Existing PM Peak LOS	2017 without Project AM Peak Delay	2017 without Project AM Peak LOS	2017 without Project PM Peak Delay	2017 without Project PM Peak LOS	2017 with Project AM Peak Delay	2017 with Project AM Peak LOS	2017 with Project PM Peak Delay	2017 with Project PM Peak LOS
I-8 WB Ramp/ Imperial Hwy	1.7	A	3.3	A	1.7	A	2.8	A	1.5	A	2.8	A
I-8 EB Ramp/ Imperial Hwy	5.6	A	3.3	A	5.7	A	3.2	A	6.1	A	3.2	A
SR-98/Imperial Hwy	0.7	A	0.8	A	0.8	A	0.9	A	0.9	A	0.9	A
I-8 WB Ramp/ Dunaway Rd	2.5	A	1.9	A	1.0	A	0.4	A	3.3	A	0.4	A
I-8 EB Ramp/ Dunaway Rd	6.9	A	7.4	A	8.3	A	10.9	B	8.3	A	10.9	B

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table General Note: Average delay reported in seconds per vehicle. All study intersections are unsignalized.

Table Key: EB = eastbound; I-8 = Interstate 8; Hwy = Highway; LOS = level of service; Rd = Road; SR-98 = State Route 98; WB = westbound.

Water, Rail, and Air Traffic

Water Traffic

The IVS project is not adjacent to a navigable body of water. Therefore, the operation of the IVS project would not impact water-related transportation.

Rail Traffic

The IVS project would include a permanent private crossing of an existing railroad track as part of its primary access. With a negotiated lease agreement as required in Measure TRANS-2, the operation of the IVS project would not result in an adverse impact related to this crossing.

Air Traffic

The IVS project would not have any concentrated heat rejection sources during operations, so there would not be any corresponding turbulence impacts to low flying aircraft.

Glare

The relationship between the SunCatcher mirror and the face of the Stirling Engine would change when moving from the stow position, or when responding to cloud cover or to high winds. It is possible that malfunctions in mirror control might reasonably occur, presenting a potential glare or temporary blindness hazard to off-site viewers including motorists or airplane pilots. Measure TRANS-4 addresses this potential adverse impact during operation of the IVS project.

Vapor Plumes

The IVS project has no cooling towers or boilers, so no visible water vapor plumes that could cause a visual impact to motorists would occur during operations.

Transport of Hazardous Materials

The operation of the IVS project would involve the transport of hazardous materials to the site. Transport vehicles will be required to follow Federal regulations governing the proper containment vessels and vehicles, including appropriate identification of the nature of the contents.

Deliveries to the site would require vehicles to cross a private crossing of a railroad track as part of the primary access to the site. This railroad track is currently inactive. Should that railroad track become active, either MTS or the applicant, via a revised lease agreement, would need to provide the appropriate railroad crossing warning equipment.

In addition to the governing Federal regulations, Measure HAZ-3 requires the applicant to develop and implement a Safety Management Plan for the delivery of hazardous materials. Refer also to Section 4.11 for additional discussion regarding hazardous materials.

Applicant-Proposed Modifications

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in traffic and transportation impacts during operations compared to the IVS project as described above. This is because these proposed modifications would be operate and function similarly to, and in the same general locations, as these facilities as evaluated for the original IVS project.

The IVS project is forecast to be fully operational in 2017. As described above for the original IVS project, during operations, the study area will experience minor increases in traffic associated primarily with operation worker commute, operation and maintenance (O&M) trips, and minimal visitor trips. That traffic analysis evaluated the worst-case operations scenario by accounting for all these trips. Table 4-68 shows the anticipated operations trips with the daily round trips associated with the alternative water source added. As shown, the trips associated with the alternative water source represent only a small percent of the daily operations trips. The analysis for the original IVS project showed that the operations-related traffic in 2017 would not adversely impact the LOS on area roads, with the LOS on those road segments at LOS A or B with the project operations traffic included. The operations-related traffic in 2017 would not adversely impact the LOS at area intersections, with the area intersections all operating at LOS A. The addition of the seven daily water truck roundtrips to the area road segments and intersections would not be sufficient to change the LOS at those road segments and intersections from the LOS estimated for the original IVS project operations in 2017. As a result, the operations-related trips for the alternative water source will not adversely affect the LOS, or result in the degradation of operations, on area roads and intersections.

Table 4-68 Project Operations Trip Generation

Vehicle Type	Peak Daily Round Trips	Morning Peak Inbound Trips	Morning Peak Outbound Trips	Total Morning Peak Trips	Evening Peak Inbound Trips	Evening Peak Outbound Trips	Total Evening Peak Trips
Operations	224	112	0	112	0	112	112
Deliveries (Table Note 1)	36	9	5	14	0	4	4
Offsite Water Supply delivery (Table Note 2)	42	6	0	6	0	6	6
Visitors	20	5	5	10	5	5	10
Total Trips	**322**	**132**	**--**	**132**	**--**	**132**	**132**
Percent Water Supply Trips are of Total Trips	13%	4.5%	--	4.5%	--	4.5%	4.5%

Table Source: Supplement to the Imperial Valley Solar (formerly Solar Two) Application for Certification (URS, May 2010) and LSA Associates, Inc. (June 2010).

Table Note 1: Trucks deliveries shown in the table were adjusted into PCE vehicles (3 PCE per month).

Table Note 2: Offsite water supply deliveries shown in the table were adjusted into PCE vehicles (3 PCE per truck). 7 truck trips day = 21 PCE one-way trips or 42 round trips per day during project operation. It was also assumed that 30 percent of the water supply truck delivery trips arrive during the morning peak hour and leave during the evening peak hour while the remaining deliveries (70 percent) would arrive and leave during off-peak hours.

Table Key: PCE = passenger car equivalent.

4.15.4.2 709 MW Alternative: Agency Preferred Alternative

Construction Impacts

The construction of the Agency Preferred Alternative would result in traffic-related construction impacts similar those described in the previous section for the IVS project, at approximately the same levels because the construction levels would be approximately the same for the Agency Preferred Alternative and the IVS project. Measure TRAN-1 would apply to both the IVS project and the Agency Preferred Alternative.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Agency Preferred Alternative will not result in differences in impacts during construction related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

Operation Impacts

The Agency Preferred Alternative would have a workforce slightly less than would be needed for the IVS project because it has fewer SunCatchers. Therefore, the Agency Preferred Alternative would result in traffic and transportation related impacts similar to, and slightly less than, those described previously for the IVS project. Measures TRAN-2 to TRAN-3 would apply to both the IVS project and the Agency Preferred Alternative.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Agency Preferred Alternative will not result in differences in impacts during operations related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

4.15.4.3 300 MW Alternative

Construction Impacts

The 300 MW Alternative would provide the same solar generating facilities and features as Phase 1 of the IVS 750 MW project. The 300 MW Alternative is assumed to be constructed with

the same peak workforce as the IVS project and, therefore, would result in the same levels of construction traffic and parking demand as the IVS project. However, these conditions would occur for a shorter period of time given that the 300 MW Alternative would be approximately 40 percent of the size of the IVS project. Like the IVS project, with implementation of the cited measures, the construction related traffic and transportation impacts of the 300 MW Alternative would not be adverse.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in differences in impacts during construction related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

Operation Impacts

The 300 MW Alternative would result in the same types of traffic and transportation impacts as the IVS project. However, those impacts would be less than under the IVS project because the 300 MW Alternative would be approximately 40 percent the size of the IVS project.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in differences in impacts during operations related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

4.15.4.4 Drainage Avoidance #1 Alternative

Construction Impacts

The Drainage Avoidance #1 Alternative would be constructed with the same peak workforce as the IVS project and, therefore, would result in the same levels of construction traffic and parking demand as the IVS project. However, these conditions would occur for a slightly shorter period of time given that the Drainage Avoidance #1 Alternative would be approximately 84 percent of the size of the IVS project. Like the IVS project, with implementation of cited measures, the traffic and transportation impacts of the Drainage Avoidance #1 Alternative would not be adverse.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #1 Alternative will not result in differences in impacts during construction related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

Operation Impacts

The Drainage Avoidance #1 Alternative would result in the same types of traffic and transportation impacts as the IVS project. However, those impacts would be slightly less than under the IVS project because the Drainage Avoidance #1 Alternative would be approximately 84 percent the size of the IVS project.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #1 Alternative will not result in differences in impacts during operations related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

4.15.4.5 Drainage Avoidance #2 Alternative

Construction Impacts

The Drainage Avoidance #2 Alternative would be constructed with the same peak workforce as the IVS project and, therefore, would result in the same levels of construction traffic and parking demand as the IVS project. However, these conditions would occur for a much shorter period of time given that the Drainage Avoidance #2 Alternative would be approximately 32 percent of the size of the IVS project. Like the IVS project, with implementation of cited measures, the traffic and transportation impacts of the Drainage Avoidance #2 Alternative would not be adverse.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #2 Alternative will not result in differences in impacts during construction related to traffic and transportation compared to the IVS project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

Operation Impacts

The Drainage Avoidance #2 Alternative would result in the same types of traffic and transportation impacts as the IVS project. However, those impacts would be slightly less than under the IVS project because the Drainage Avoidance #2 Alternative would be approximately 32 percent the size of the IVS project.

The applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #2 Alternative will not result in project as described above. This is because these proposed modifications would be function and be in the same general locations as these facilities as evaluated for the original IVS project.

4.15.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Construction Impacts

Because there would be no amendment to the CDCA Plan and no solar project approved for the IVS project site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the transportation and traffic related impacts of the IVS project would not occur at the site. However, the site would be available for other uses that are consistent with the CDCA Plan. As a result, this No Action Alternative would not result in the impacts to traffic and transportation that would occur under the IVS project. However, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

Operation Impacts

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the transportation and traffic related impacts of the IVS project would not occur at the site. However, the land on which the project is proposed would become available to other uses that are consistent with the CDCA Plan. As a result, this No Action Alternative would not result in the impacts to traffic and transportation that would occur under the IVS project. However, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

4.15.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Construction Impacts

Because the CDCA Plan would be amended under this No Action Alternative to make the IVS project site unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no increase in traffic. As a result, this No Action Alternative would not result in the impacts to traffic and transportation that would occur under the IVS project. However, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

Operation Impacts

Because the CDCA Plan would be amended under this No Action Alternative to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no increase in traffic. As a result, this No Action Alternative would not result in the impacts to traffic and transportation under the IVS project. As a result, this No Action Alternative would not result in the impacts to traffic and transportation that would occur under the IVS project. However, in the absence of the IVS project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

4.15.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Construction Impacts

Because the CDCA Plan would be amended under this No Action Alternative, it is possible that the site would be developed with the same or a different solar technology. As a result, the traffic and transportation impacts during construction of that solar project would likely be similar to the transportation and traffic related impacts under the IVS project. As such, this No Action Alternative could result in impacts to traffic and transportation similar to the impacts under the IVS project.

Operation Impacts

Because the CDCA Plan would be amended under this No Action Alternative, it is possible that the site would be developed with the same or a different solar technology. As a result, the traffic and transportation impacts during operation of that solar project would likely be similar to the transportation and traffic related impacts under the IVS project. As such, this No Action Alternative could result in impacts to traffic and transportation similar to the impacts under the IVS project.

4.15.5 Cumulative Impacts

The future year background traffic volumes were estimated based on percent increases provided by Imperial County. Therefore, the future year traffic volumes without the IVS project reflect the potential traffic volumes for existing conditions plus cumulative projects. As a result, the analysis of the traffic conditions with the IVS project reflects cumulative projects. Based on the analysis provided above, the future year traffic conditions with the cumulative projects and the IVS project will not result in adverse traffic impacts on the study area roads or intersections.

4.15.6 Mitigation, Project Design Features, and Other Measures

The IVS project would be consistent with the transportation LORS. The IVS project would result in only minor traffic and transportation effects which would be substantially mitigated based on implementation of the measures provided in this section.

TRANS-1 The IVS project owner shall, in coordination with Imperial County, develop and implement a construction traffic control plan prior to earth moving activities. The plan should include scheduled delivery of heavy equipment and building material deliveries, coordination with the County of Imperial to mitigate any potential adverse traffic impacts from other proposed construction projects that may occur during the construction phase of IVS project, and adequate access for emergency vehicles to the IVS project site.

Specifically, the overall traffic control plan shall include the following:

- Schedule delivery of heavy equipment and building material deliveries, as well as the movement of hazardous materials to the site, including the adjacent lay-down area;

- Coordinate with the Imperial County to mitigate any potential adverse traffic impacts from other proposed construction projects that may occur during the construction phase of the project; and

- Ensure there is adequate access for emergency vehicles at the project site.

The construction traffic control plan shall also include the following for activities of substantial stature:

- Signing, lighting, and traffic control device placement; and

- Temporary travel lane closures and potential need for flaggers.

Verification: At least 60 days prior to start of site mobilization, the project owner shall provide to the County of Imperial for review and comment and the Compliance Project Manager (CPM) for review and approval a copy of the construction traffic control plan.

TRANS-2 Prior to construction, the project owner shall receive the signed agreement from the San Diego Metropolitan Transit System (MTS) regarding the authority to construct the proposed railroad crossing. After the physical improvements are completed to the railroad crossing, the project owner shall receive written approval from the MTS as to the adequacy of the improvements.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall provide the CPM a copy of the executed agreement with MTS regarding the proposed railroad crossing. No more than 3 months after completion of the railroad crossing improvements, the project owner shall provide the CPM with a copy of written approval from MTS regarding the adequacy of the grade crossing improvements.

TRANS-3 Prior to construction, the project owner shall document the existing condition of the primary roadways that will be used by the construction workers and heavy vehicle deliveries (up to 3 miles of the site). Subsequent to construction, the project owner shall document the condition of these same roadways and either directly reconstruct or reimburse the County of Imperial for needed repairs.

Verification: At least 3 months prior to the start of site mobilization, the project owner shall submit a review of existing roadway pavement conditions to Imperial County for review and comment and the CPM for review and approval. This review will include photographs and the analysis of pavement and sub-surface

conditions. The CPM will need to approve the summary of existing pavement conditions prior to the commencement of construction.

No later than 2 months after the end of construction activities, the applicant shall submit an analysis of the roadway pavement conditions to Imperial County for review and comment and the CPM for review and approval. The review will include photographs, the analysis of pavement and sub-surface conditions, and a schedule for repair.

After the repairs are completed, the applicant shall submit a letter to Imperial County and the CPM indicating such repairs are finished and ready for inspection.

TRANS-4 The project owner shall prepare and implement a SunCatcher Mirror Positioning Plan that would avoid the potential for human health and safety and significant visual distractions from solar radiation exposure.

Verification: At least 90 days before the commercial operation of either of the IVS power plants, the project owner shall submit the SunCatcher Mirror Positioning Plan (MPP) to BLM's Authorized Officer and the CPM for review and approval. The project owner shall also submit the plan to California Department of Transportation (Caltrans), California Highway Patrol (CHP), the Federal Aviation Administration (FAA), and Imperial County for review and comment and forward any comments received to BLM's Authorized Officer and the CPM. The Mirror Positioning Plan shall accomplish the following:

(1) Identify the mirror movements and positions (including reasonably possible malfunctions) that could result in possible exposure of observers at various locations including those in aircraft, motorists, pedestrians, and hikers to reflected solar radiation from the mirrors.

(2) Describe within the MPP how programmed SunCatcher operation would avoid the potential for human health and safety hazards attributable to solar radiation at locations of observers where momentary solar radiation exposure might be greater than the Maximum Permissible Exposure of 10 kW/m^2 for a period of 0.25 second or less or where excessive brightness might be hazardous to motorists.

(3) Prepare a monitoring plan that would a) obtain field measurements in response to legitimate complaints; b) verify that the Mirror Positioning Plan would avoid the potential for health and safety hazards, including temporary

or permanent blindness, at locations of possible observers; c) provide requirements and procedures to document, investigate, and resolve legitimate complaints regarding glare or excessive brightness.

(4) The monitoring plan shall be coordinated with the FAA, Caltrans, CHP, and Imperial County and be updated on an annual basis for the first five years and at 2 year intervals after that.

4.15.7 Summary of Impacts

Table 4-69 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to special designations.

As shown in Table 4-69, based on implementation of the measures described above, the IVS project would not result in unavoidable adverse impacts related to traffic and transportation.

Table 4-69 Summary of Traffic Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	Short-term traffic impacts on area roads during construction. Construction of a crossing of existing railroad tracks. Damage to area roads during construction. Potential glare on vehicles on area roads. No impacts related to parking, emergency services vehicle access, water traffic, and air traffic. Will not contribute to cumulative impacts sufficient to result in adverse impacts on study area roads or intersections.	TRANS-1: traffic control plan. TRANS-2: required agreement with railroad owner. TRANS-3: repair or compensation for damaged road surfaces. TRANS-4: SunCatcher Mirror Positioning Plan	None.
709 MW Alternative: Agency Preferred Alternative	Fewer impacts than the IVS project due to the smaller number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts at the project site; potential impacts at sites of other renewable energy projects.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts at the project site; potential impacts at sites of other renewable energy projects.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Impacts potentially similar to the Agency Preferred Alternative and the IVS project.	None identified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

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4.16 Visual Resources

The analysis in this section evaluates the potential visual impacts of the Imperial Valley Solar (IVS) project; its consistency with applicable Laws, Ordinances, Regulations and Standards (LORS); and conformance with applicable guidelines in the National Environmental Policy Act (NEPA).

To provide a consistent framework for the analysis, a standard visual assessment methodology has been developed by the California Energy Commission (CEC) and applied to a number of siting cases. The analysis in this section is based on a visual resource inventory of the area and the methodology developed by the CEC and used in the Visual Impact Analysis in the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS).

As noted above, the project is evaluated for conformance with applicable LORS. Adopted expressions of local public policy pertaining to visual resources are also given great weight in determining levels of viewer concern. Measures are proposed as needed to reduce or avoid potentially adverse impacts under NEPA, and to ensure LORS conformance, as feasible.

4.16.1 Methodology

The overall objective of the BLM Visual Resource Management (VRM) System is to manage public lands in a manner that will protect the quality of the visual (scenic) values in accordance with Section 102(a)(8) of the Federal Land Policy and Management Act of 1976 (FLPMA). The BLM VRM System is a methodical approach to inventorying and managing scenic resources on the public lands.

Impacts under NEPA are defined in terms of context and intensity. Context means that the significance of an action must be analyzed in several contexts, such as society, the affected region, affected interests, and locale. Intensity refers to the severity of impact, and includes a variety of factors to be considered (40 Code of Federal Regulations [CFR] 1508.27).

Some of the intensity factors potentially relevant to visual impacts include unique characteristics of the geographic area such as proximity to historic or cultural resources, or park lands, the degree of controversy, the degree of uncertainty about possible effects, the degree to which an action may establish a precedent for future actions, and the potential to contribute to cumulatively significant impacts.

4.16.2 Definition of Resource

Visual resources refer to all objects (man-made and natural, moving and stationary) and features (e.g., landforms and water bodies) that are visible on a landscape. These resources contribute to the scenic or visual quality of the landscape, that is, the visual appeal of the landscape.

4.16.3 Applicable Regulations, Plans, and Policies/Management Goals

The BLM's responsibility for managing visual (scenic) resources on public lands is established by law. NEPA requires that measures be taken to "..assure for all Americans…aesthetically pleasing surroundings" and FLPMA states that "…public lands will be managed in a manner which will protect the quality of scenic values of these lands."

The California Desert Protection Act of 1994 and the BLM *California Desert Conservation Area (CDCA) Plan* (1980, as amended) also provide for the protection of visual resources. From the CDCA Plan (United States Department of the Interior BLM 1999):

> "The CDCA has a superb variety of scenic values. The public considers these scenic values a significant resource. The Bureau recognizes these values as a definable resource and an important recreation experience. These visual resources will receive consideration in Bureau of Land Management resource management decisions.
>
> "Many management activities involve alteration of the natural character of the landscape to some degree; the BLM will take the following actions to effectively manage for these activities:
>
> (1) The appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple-use class guidelines.
>
> (2) Proposed activities will be evaluated to determine the extent of change created in any given landscape and to specify appropriate design or mitigation measures using the Bureau's contrast rating process.

Because Imperial County has no land use jurisdiction over public lands managed by the BLM, the Imperial County General Plan and the Imperial County zoning regulations are not applicable to the activities proposed on BLM managed public lands.

4.16.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is provided in Appendix B, Determination of NEPA Adequacy (DNA).

4.16.4.1 IVS Project: 750 MW Project

Direct Operation Impacts

Impacts of Structures on Key Observation Points

View from Plaster City Off-Highway Vehicle Open Area, Looking South (approximately 1.5 miles from site) – Key Observation Point 1

The overall visual sensitivity within this landscape unit is generally considered to be moderately high. The existing scenic quality of this landscape unit ranges from moderate to moderately low. However, viewer concern is considered moderately high due both to high numbers of recreational visitors in the area, and to the location of the setting in the CDCA in general. Viewer exposure is high due to the proximity of the viewers to the IVS project site because many of those viewers would see the project at foreground distance from high-use parts of the Plaster City Off-Highway Vehicle (OHV) Open Area; high due to high numbers of viewers, reaching several thousands during peak weekends; and high due to the generally unobstructed view conditions inherent in the level, open landscape.

Figures 3-7 and 4-1 depict views of the site from a middle-ground distance of roughly 1.5 mi. This is considered to be a reasonably representative viewpoint in this KOP. The range of actual view conditions of visitors in the Open Area would extend from immediate foreground distance to background distance. A substantial number of Plaster City OHV Open Area users, including large groups attending organized races, could view the IVS project from closer distances including, occasionally, foreground (0.5 mi or under) distance. At these nearer distances, the IVS project would appear much more prominent, dominating the view from foreground locations.

From such viewpoints near the IVS project site, views of the Plaster City facility and highway would also be more prominent, compromising the intactness of the landscape.

The project visual contrast in the Plaster City OHV Open Area would range from very strong to moderate, as a function of distance from the IVS project site. As represented in the simulation from KOP 1, at a distance of 1.5 mi, the project contrast would be moderate. The color and texture contrast of the vast rows of SunCatchers with the existing landscape at this distance would be strong, lending a distinctly man-made, industrial character to the view. Form and line contrast, however, would be relatively weak, matching the broad horizontal lines of the level terrain. From some viewpoints, the taller buildings of the Main Services Complex (up to 77 feet tall) could be visible in the middle of the site, exhibiting some vertical form and line contrast and attracting attention. However, these features would generally be dwarfed by the vast scale and dominance of the SunCatcher fields.

The IVS project would exert strong horizontal scale and spatial dominance, occupying a vast expanse of the landscape from this KOP. However, in overall visual scale, dominance would be moderate outside the foreground zone. As depicted in the simulation, the overall proportion of the view occupied by the IVS project would be small compared to the foreground terrain, background mountains, and sky, due to the level terrain and oblique viewing angle.

The IVS project would not physically block scenic views of Signal Mountain or the Jacumba Mountains in the distance from viewpoints beyond immediate foreground distance within the Plaster City OHV Open Area. The project would, however, block such views for viewers on Evan Hewes Highway directly adjacent to the IVS project site.

The overall visual change for viewers in the Plaster City OHV Open Area is considered moderate. From most of the Plaster City OHV Open Area beyond foreground distance of the IVS project, the project would attract attention but would not dominate the existing landscape.

In the context of moderately high overall visual sensitivity, the moderate level of visual change experienced by the majority of Plaster City OHV Open Area viewers (those outside of foreground distance from the project) could be regarded as potentially substantial. However, considering the disturbed character of the Plaster City OHV Open Area terrain and the activity-focused nature of much of the recreation activity that occurs there, the moderate levels of visual change experienced outside the foreground distance zone are adverse but not substantial.

However, for those viewers within foreground distance of the IVS project, including motorists on segments of Evan Hewes Highway adjacent to the project site, the project contrast would be strong, and scenic views of mountains to the south could be blocked. In the context of moderate overall visual sensitivity this could represent a substantial adverse impact. This impact to

foreground viewers, particularly motorists on adjacent foreground segments of highway, is discussed separately under KOP 5, below.

No mitigation is considered necessary outside the foreground distance in the Plaster City OHV Open Area. Measures to address sensitive foreground views are discussed later in Section 4.16.6.

Upper Yuha Desert (Scenic Quality Rating Unit 1) – Key Observation Points 2, 3, 4, 5

View from Nearby Residence on Evan Hewes Highway, Looking Southwest (approximately 1.5 miles) – Key Observation Point 2

As shown on Figures 3-8 and 4-2, KOP 2 represents the view of the nearest residence to the IVS project site, approximately 1.5 mi to the east on Evan Hewes Highway. As such, it is also representative of views from the highway at middle-ground distance. The project visual contrast from this KOP would be similar to that described under KOP 1, above, which is at a similar distance. As represented in the simulation from KOP 2, the project contrast at this distance would be moderate. Color and texture contrast with the existing landscape at this distance would be strong, lending a conspicuous, distinctly man-made character to the view. Form and line contrast, however, would be relatively weak, blending with the broad horizontal lines of the level terrain, and occupying a relatively small proportion of the view due to the level terrain relationship to the viewer and resulting oblique viewing angle.

Similarly, at this distance the IVS project would exert strong horizontal scale and spatial dominance, occupying a vast extent of the landscape. However, in overall visual scale, dominance would be moderate outside the foreground zone, and lower as distance from the project site increase. As depicted in the simulation, the overall proportion of the view occupied by the IVS project would be small compared to the foreground terrain, background mountains, and sky.

The IVS project would not block scenic views within the middle-ground distance zone.

The overall visual change from KOP 2 and similar middle-ground viewpoints is considered moderate. At this distance and under these level terrain relationships, the IVS project would attract attention but would not dominate the existing landscape.

In the context of moderately high overall visual sensitivity, the moderate level of visual change experienced by these residents and motorists on Evan Hewes Highway at distances of over 1 mi would be somewhat adverse but not substantial.

No mitigation is considered necessary at distances of over roughly 1 mi on or along Evan Hewes Highway.

As mentioned previously, impacts to foreground viewers, particularly motorists on adjacent foreground segments of highway, are discussed separately under KOP 5, below.

View from Residence to IVS Project Transmission Line, Looking West (approximately 1 mile) – Key Observation Point 3

As shown on Figures 3-9 and 4-3, KOP 3 represents views of the IVS project transmission line from the nearest residence, at the western edge of the Imperial Valley agricultural area east of the Yuha Desert. The photograph actually appears to have been taken west of the irrigation canal marking the westernmost boundary of the irrigated farmlands in which the residence is located. Consequently, visual exposure to the transmission lines is actually greater than would typically be the case in the agricultural area. On roads and in fields in the irrigated area, views toward the transmission corridor tend to be filtered by the canal levees and occasional vegetation.

As illustrated in the simulation, at this distance the existing Southwest Powerlink transmission lines and towers are evident, though visually subordinate within the view. The line and tower intrude into the skyline of the Jacumba Mountains ridge in the background distance, compromising the existing visual quality in this view. The IVS project transmission line would parallel the existing line and add incrementally to its visual presence. In combination, the vertical form contrast of the two lines would increase to a moderately high level, as would intrusion into the background mountain skyline. The contrast of the combined transmission lines could attract attention and begin to dominate the characteristic landscape.

In the context of moderately low overall visual sensitivity from this and similar locations due to low visual exposure and low viewer numbers, the moderately high level of anticipated visual change of the combined powerlines would not be adverse.

No mitigation is considered necessary from KOP 3 or similar viewpoints along the canal.

View from Town of Ocotillo, Looking West (approximately 4.5 miles) – Key Observation Point 4

As shown in Figures 3-10 and 4-4, KOP 4 is taken from the town of Ocotillo, roughly 4.5 mi west of the IVS project site on I-8, and is representative of I-8 motorists at background distances from the project. A broad overview of the West Mesa and Yuha Desert area is visible from the elevated position of this KOP above the valley floor. However, as depicted in the simulated view, the visibility and prominence of the IVS project at background distances such as this is limited. The project contrast would be due primarily to color and texture contrast; at this distance the mirror reflections would often resemble the surface of a lake. The overall line and form contrast would be very weak due to the oblique viewing angle and low overall visual magnitude within the field of view. Project contrast would be seen, but would not attract attention.

The overall visual sensitivity from I-8 is considered moderately high. However, the low level of overall visual change from I-8 would not be adverse.

No mitigation is considered necessary from KOP 4 or similar viewpoints within the background distance zone.

View from I-8 Near Dunaway Road, Looking Northwest (approximately 0.5 mile) – Key Observation Point 5

As shown on Figures 3-11 and 4-5, KOP 5 represents foreground views, particularly westward views, of the IVS project by motorists on I-8. The precise distance from viewpoint to the IVS project site is not described; however, it appears to be approximately 0.5 mi or near the outer limit of the foreground distance zone. To fully understand the visual effect of the IVS project, however, it is important to recall that for roughly 5.6 mi of site frontage on I-8, the project would be viewed from much closer distances, and would appear much more prominently, with the nearest rows of 38-foot-tall SunCatchers often within a few feet of the edge of I-8.

The view from I-8 facing westward is highly scenic, consisting of relatively intact expanses of the Yuha Desert floor, with low rolling terrain of washes evident in portions of the project frontage, and striking views of the Jacumba and Coyote Mountains at the horizon. The existing Southwest Powerlink transmission line ranges from visually subordinate to dominant in the view according to distance, intruding into the view and compromising visual quality, especially at foreground distance. Nevertheless, the overall visual sensitivity from this viewpoint is moderately high.

As depicted in the simulated view, in near-middle-ground and foreground views from adjacent roads, the IVS project would be strongly dominant and exhibit a high level of visual contrast and overall visual change. This would include roughly 6.5 mi along I-8, and roughly 6 mi along Evan

Hewes Highway. The 38-foot-tall mirror arrays would present strong color, form and line contrast, and exhibit strong spatial dominance, extending for miles. Furthermore, the addition of power lines along the highway would combine with the existing Powerlink line to dominate the foreground view of motorists, particularly for the roughly 1 mi segment where the new line would parallel the highway foreground before turning south to parallel the existing transmission corridor. In combination with the existing transmission line, the project transmission line would increase contrast and dominance of the transmission corridor as viewed from the highway. For an approximately 0.9-mi segment of highway frontage not included in the IVS project site, parts of the project, including the Main Services Complex, could be visible at times, but would often be obscured by high, irregular terrain of washes and low rises in the immediate highway foreground in this area, which have the effect of blocking all views beyond. These segments are limited in length, however. Overall the IVS project would strongly demand attention, could not be overlooked, and would strongly dominate the landscape over more than 6 mi of highway frontage in foreground distance of the project features.

Views of mountains to the north and northwest, including the Coyote Mountains, Superstition Mountain, and Carrizo Mountain, would be largely obstructed to westbound motorists in the vicinity of the IVS project.

In the context of moderately high overall visual sensitivity from I-8, this high level of overall visual change would represent a substantial adverse impact. Other foreground views of the IVS project, from Evan Hewes Highway and the Plaster City OHV Open Area are also considered to have moderately high sensitivity, and would experience similar effects, including strong visual dominance and visual change by the IVS project; and obstruction of views of the mountains. Therefore, all views in the foreground distance zone and the near-middle-ground distance zone to at least 1 mi would experience strong project dominance and visual change, and a substantial adverse visual impact. Measures VIS-4 and VIS-5, provided later in this section, would minimize these impacts to foreground views.

Yuha Desert/Yuha Basin (Scenic Quality Rating Units 2 and 3) – Key Observation Points 6, 7, 8

KOPs 6, 7, and 8 were added to the analysis to portray the range of anticipated visual effects the IVS project would have on sensitive recreational destinations in the Yuha Desert ACEC in the middle-ground distance zone, including extensive segments of the Juan Bautista de Anza National Historic Trail (Anza Trail, Route 274). Simulations were not prepared for these viewpoints. However, the anticipated level of project contrast and dominance from each of these viewpoints is very clear, particularly because the Plaster City facility, which appears in each

view, is an ideal scale and location reference point, and the extent of the IVS project site is very clear from each viewpoint.

KOP 6 is a view from the eastern segment of the Anza Trail near Dunaway Campground at a distance of 0.5 mi from the IVS project site, or within foreground distance (refer to Figures 3-12 through 3-14). From this viewpoint, the IVS project would exhibit high contrast and dominance, becoming the most prominent feature in the view over a vast area. From this KOP, viewers would need to turn their heads to take in the entire IVS project site. The IVS project would not block views of mountains in the background, including Superstition Mountain to the north. However, the project's pronounced contrast in color, texture, and at times, brightness; and its strong spatial dominance would represent a high level of visual change. The IVS project would demand attention, could not be overlooked, and would be dominant in the landscape.

KOP 7 is a view from Overlook Campground on the Anza Trail at a distance of approximately 1 mi, or middle-ground distance as shown on Figure 3-13. Similar to KOP 4, the IVS project would exhibit strong color and texture contrast and strong spatial dominance, becoming the most dominant feature in views to the north. The IVS project would demand attention, could not be overlooked, and would be dominant in the landscape.

In the context of high overall viewer sensitivity in foreground and middle-ground viewpoints in the Yuha Desert ACEC, impacts from KOPs 6, 7, and other segments of the Anza Trail at these distances would be substantial.

KOP 8 is a view from the vicinity of the Yuha Geoglyphs, also along the Anza Trail, at a distance of approximately 3 mi, approaching background distance as shown on Figure 3-14. At this distance, the IVS project would be very evident but would exhibit a moderate degree of contrast. Color and texture contrast could be moderately high, but form and line contrast would be weak due to the level, oblique angle of view and the small part of the field of view occupied by the IVS project. Similarly, the visual dominance of the IVS project would be moderate in scale at this distance.

In the context of high viewer sensitivity, the impacts of the IVS project at this distance would be adverse, but not substantial. Measures provided later in this section would minimize these visual impacts.

From other principal destinations in the Yuha Desert ACEC, such as Yuha Well, fossil shell beds, and segments of the Anza Trail south of the Yuha Geoglyphs, and along Highway 98 and the surrounding areas, the IVS project would not be visible due to intervening terrain of washes and low hills.

Glare and Nighttime Light Impacts

From each of the KOPs discussed above, diffuse reflected light from the SunCatcher mirrors could potentially represent a substantial component of the overall appearance, visual contrast/change, and impact of the IVS project. The contribution of potential glare under most typical conditions was considered in the evaluation of the overall project-related visual change in the impact analysis above. Under most conditions, diffuse reflection would be seen by viewers and appear similar to the reflection of the sky on a lake surface, or at certain times, more intense shimmering glare from brighter diffuse reflection of the sun.

However, under certain circumstances, glare effects could be much more prominent, particularly in early morning hours as seen by westbound motorists; and in the late afternoon near sunset for eastbound motorists on I-8 and Evan Hewes Highway. Glare from diffuse reflection is not considered to represent a hazard or substantial nuisance to aircraft due to distance and potential level of brightness.

Data on anticipated brightness or luminance of the IVS project and the SunCatcher units is not available, but it was estimated that approximately 5 percent of the visible spectrum which is not redirected to the power conversion units (PCU) has the potential to make the SunCatcher mirrors appear as very bright objects. This reflection could be an intrusive and distracting nuisance to motorists under certain conditions but would not produce retinal damage.

All the simulations show a first (outer) row of mirrors exposed to viewers on the highway. The same is true for the mirrors at the ends of the rows of SunCatchers. In the absence of data to the contrary, these vertical mirrors can be expected to be sources of distracting nuisance brightness in the early mornings or late afternoons. In addition, motorists traveling at freeway speeds east or west on I-8 past the north-south-oriented rows of SunCatchers may be exposed to a flicker or stroboscopic effect from the repetitive bright mirrors at the row ends. The potential adverse impact of a flicker effect from fluorescent lamps or from some tunnel lighting installations on some individuals is a well-established phenomenon.

Nighttime light pollution as a result of the IVS project is a concern. A large area around the IVS project site is now largely dark at night, with the exception of the Plaster City facility which is an isolated instance. The pristine, unlit night sky is an important part of the camping experience for many visitors to remote areas such as the campsites in the vicinity of the Anza Trail, some of which are near the IVS project site. Unmitigated night lighting of the IVS project could represent a substantial impact to the experience of campers at these sites.

Night lighting of the Main Services Complex will consist of 400 watt high-pressure sodium lights, with illumination falling to 0.0 foot-candles on the ground a short distance from the facility. Parking and road lighting on the site will consist of full cut-off luminaires to minimize night sky

light pollution. Preliminary photometric studies provided by the applicant depict illumination from these fixtures falling to 0.0 foot-candles a short distance from each roadway intersection.

To ensure these levels of performance, to address potential impacts from construction lighting, and to further minimize potential night lighting impacts to campers in the Yuha Desert ACEC and Anza Trail, Measure VIS-2 has been incorporated in the project. This measure requires that all exterior lighting be designed such that lamps and reflectors are not visible from beyond the IVS project site; lighting does not cause excessive reflected glare; direct lighting does not illuminate the nighttime sky, except for required Federal Aviation Administration (FAA) aircraft safety lighting; and illumination of the IVS project site and the immediate vicinity is minimized.

Applicant Proposed Modifications

The applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in operations related visual, glare, and nighttime lighting impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, operated, and in the same general locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in operations-related visual impacts compared to the IVS project because this modification would not result in any permanent structures on or off the IVS project site and the trucks associated with the alternative water supply would travel on existing roads and would be visible for only a short while as they travel between the well site and the IVS project site.

Project Construction Impacts

In addition to the IVS project site, a 100-ac temporary laydown site east of the project site on Dunaway Road and north of I-8 would be used during project construction.

The laydown area would be visually very prominent within the foreground of Dunaway Road. The form, line, and texture contrast of stored equipment, materials, and disturbed soil would be strong. While the number of viewers on this road is relatively low at most times, during the Plaster City OHV Open Area's periods of peak use, recreational viewer numbers would be high. The laydown area would also adjoin and be prominently visible from I-8 at the northeastern quadrant of the Dunaway Road interchange. The sensitivity of both foreground recreational viewers on Dunaway Road and motorists on I-8 is considered moderately high. The strong contrast of the 100 ac laydown area would be substantial during the approximately 40-month construction period for the IVS project; and could remain substantial for a long time after the completion of construction without adequate post-construction mitigation of the disturbed

vegetation and soil surface. Measure VIS 7 has been incorporated in the IVS project to reduce the temporary visual impacts of the laydown area during construction period and to address the longer term impacts of ground disturbance at the lay-down area through increased set-back of the laydown area from I 8, and re-grading and revegetation with locally native species following project construction.

The potential visual impacts of project grading and construction would be considerable and comparable to those of the IVS project itself. Grading would result in strong color contrast from soil surface disturbance. Project construction would include a highly industrial scene of assembly and installation of the SunCatcher units. These impacts are considered substantial and unavoidable, but would cease on the completion of the construction of the IVS project.

The construction of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in construction related visual, glare, and nighttime lighting impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed and in the same general locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in construction-related visual impacts compared to the IVS project because this modification will not result in the construction of any structures or facilities on or off the IVS project site.

Indirect Impacts

By substantially lowering the prevailing visual quality of the local viewshed in the Yuha Desert/western Salton Trough, the IVS project could have the indirect effect of encouraging additional subsequent development of similar character in the area. Because the relatively intact existing landscape would appear highly compromised after introduction of the IVS project, the incremental additional impacts of other future projects could appear to be less substantial than if they were occurring in the current, intact landscape without the IVS project.

Impacts of Project Closure and Decommissioning

Permanent closure of the IVS project would require a contingency/decommissioning plan to ensure compliance with applicable laws, ordinances, regulations, and standards (LORS), removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

The removal of the IVS project facilities would leave a very prominent visual impact over the entire site due to color contrast created between graded or disturbed soil areas and undisturbed

areas on and around the project site. This color contrast is due particularly to the dark color element contributed by normal scrub vegetation cover, and the typical dark desert pavement surface that characterizes large portions of the site and vicinity. After decommissioning, the site would resemble the most disturbed parts of the Plaster City OHV Open Area to the north. At present, despite some evidence of surface disturbance from past OHV use on the site, the site does not resemble the Plaster City OHV Open Area but retains a predominantly natural character. However, unlike the Open Area, the disturbed area after decommissioning would be highly visible to motorists on I-8. Revegetation of desert areas is difficult but has been implemented by the BLM El Centro Field Office with success over time. Therefore, visual recovery from land disturbance after closure and decommissioning of the IVS project could occur, although only over a long period of time, with implementation of an active and comprehensive revegetation program.

4.16.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative will result in short- and long-term visual impacts very similar to the impacts described in the previous section for the IVS project. This is because the Agency Preferred Alternative would be constructed on approximately the same number of acres on the site, avoiding drainages in the internal part of the site. As a result, views of the site from outside viewpoints will be very similar to the views of the site under the IVS project. The same measures described in the following section to address adverse visual impacts of the IVS project would also apply to the Agency Preferred Alternative.

The construction and operation of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Agency Preferred Alternative will not result in differences in visual, glare, and nighttime lighting impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and in the same general locations and approximately the same overall site size as the facilities evaluated for the original IVS project.

4.16.4.3 300 MW Alternative

The setting for the 300-Megawatt (MW) Alternative would be approximately 2,600 ac or 40 percent of the IVS project site. The land affected by the 300 MW Alternative would be on the west part of the IVS project site, on land under the jurisdiction of the BLM.

Direct Operation Impacts

Impacts of Structures on Key Observation Points

View from Plaster City Off-highway Vehicle Open Area/West Mesa, Looking South (approximately 1.5 miles from the site) – Key Observation Point 1

As shown on Figures 3-7 and 4-1, the visual sensitivity in this landscape unit is generally considered to be moderately high. The existing scenic quality of this landscape unit ranges from moderate to moderately low. Viewer concern is considered moderately high due both to high numbers of recreational visitors in the area, and to the location of the site in the CDCA. Unlike under the IVS project, however, viewer exposure would be moderate to low under the 300 MW Alternative. The area of foreground and near-middle-ground-distance exposure to visitors in the Plaster City OHV Open Area would be far less than under the IVS project, at approximately 2 mi of Evan Hewes Highway compared to approximately 6 mi under the IVS project.

In contrast to the view of the IVS project**,** the visibility of the 300 MW Alternative from the Plaster City OHV Open Area would be far less. The principal racing and gathering areas in the Plaster City OHV Open Area would be over 1 mi farther from the nearest project features under the 300 MW Alternative. At this distance, the project contrast would range from moderate to weak depending on the viewer's location in the Plaster City OHV Open Area. Strong project contrast would still be experienced adjacent to the parts of the 300 MW Alternative abutting Evan Hewes Highway. However, the area of this foreground and near-middle-ground-distance exposure would be far less than under the IVS project, at approximately 2 mi compared to approximately 6 mi under the IVS project. The overall visual change for visitors of the Open Area would at most be moderate under the 300 MW Alternative.

In the context of moderate overall viewer sensitivity, this would represent an adverse but not substantial visual impact of the 300 MW Alternative.

Upper Yuha Desert (Scenic Quality Rating Unit 1) – Key Observation Points 2, 3, 4, 5

KOP 2 shows the view from a nearby residence on Evan Hewes Highway, looking southwest (approximately 1.5 mi from the site). KOP 2 was discussed under the IVS project but would not be applicable to the 300 MW Alternative, due to the great distance to the project site under the 300 MW Alternative (over 4.5 mi). At virtually background distance, the project contrast and impact under the 300 MW Alternative would be minor. Under the 300 MW Alternative, the

nearest residences would be in Ocotillo, to the west. Similarly, at that distance (approximately 4 mi), the project contrast and impact would be minor under the 300 MW Alternative.

KOP 2 was also representative of viewers on Evan Hewes Highway. Under the 300 MW Alternative, views from KOP 2 would be somewhat similar to those portrayed in Figures 3-8 and 4-2 for a larger segment of that highway, from the vicinity of Plaster City eastward.

As discussed under KOP 1, the strong project contrast would still be experienced by motorists adjacent to the segments of the 300 MW Alternative abutting Evan Hewes Highway, and impacts in that segment would be substantial, with rows of SunCatchers prominent in the immediate visual foreground, strongly dominating the viewers' visual experience. However, the area of this foreground and near-middle-ground-distance exposure would be far less under the 300 MW Alternative than under the IVS project, at approximately 2 mi compared to approximately 6 mi. At distances of approximately 1.5 mi or more, as shown on Figure 4-2, the contrast and dominance would be reduced by distance to moderate levels, and impacts to motorists would be adverse but less than significant under the 300 MW Alternative.

View from Residence to IVS Project Transmission Line, Looking West – Key Observation Point 3

As shown on Figures 3-9 and 4-3, KOP 3 represents views of the IVS project transmission line from the nearest residence, at the west edge of the Imperial Valley agricultural area east of the Yuha Desert. The view under the 300 MW Alternative would be the same as described for the IVS project. As under the IVS project, this visual impact is considered adverse, but not substantial under the 300 MW Alternative.

View from Town of Ocotillo, Looking West (approximately 5 miles) – Key Observation Point 4

As shown on Figures 3-10 and 4-4, KOP 4 is from the town of Ocotillo, approximately 5 mi west of the project site on I-8, and is representative of I-8 motorists at background distances from the project. Similar to conditions under the IVS project, the project viewed at this background distance under the 300 MW Alternative would exhibit weak overall contrast, dominance and visual change. The overall change however would be less than half that of the IVS project. As under the IVS project, the low level of overall visual change at this KOP under the 300 MW Alternative would be a less than substantial impact at this distance.

View from I-8 Near Dunaway Road, Looking Northwest – Key Observation Point 5

As shown on Figures 3-11 and 4-5, KOP 5 represents foreground views, particularly westward views, of the project site by motorists on I-8. This viewpoint appears to be approximately 0.5 mi from the project site or near the outer limit of the foreground distance zone. It is important to note that for the entire project frontage on I-8, the project would be viewed from much closer distances, and would thus appear much more prominently, with the nearest rows of 38-foot-tall SunCatchers within a few feet of the edge of the highway.

The actual location of KOP 5, near Dunaway Road, makes that viewpoint not relevant to the 300 MW Alternative because it is over 5 mi from the nearest part of the project site. However, the general condition represented in that view, that is, views of the project at foreground distance from the highway, is relevant to the 300 MW Alternative. Similar viewpoints on I-8 at foreground distance under the 300 MW Alternative would look much the same. As under the IVS project, a considerable distance of I-8 frontage would be characterized by SunCatchers in the immediate visual foreground of the highway under the 300 MW Alternative, at approximately 3.3 mi rather than the 5.6 mi under the IVS project. Therefore, very strong project contrast viewed by motorists with moderately high sensitivity would represent a substantial adverse impact under the 300 MW Alternative although that impact would be comparatively less than under the IVS project because of its lesser extent and duration.

The impacts of the project transmission line would be similar under the 300 MW Alternative and the IVS project, except that in the 300 MW Alternative it would not be viewed in combination with the SunCatcher fields that would be provided in Phase 2 of the IVS project (but not in the 300 MW Alternative). The new transmission line would be highly prominent in the foreground of I-8 for nearly 1 mi, exhibiting high contrast and dominance. In the context of moderately high sensitivity of I-8 motorists, this would represent a substantial adverse visual impact under the 300 MW Alternative.

Yuha Desert/Yuha Basin (Scenic Quality Rating Units 2 and 3) – Key Observation Points 6, 7, 8

KOP 6 represents the east segment of the Anza Trail near Dunaway Campground, near Dunaway Road south of I-8. Under the 300 MW Alternative, Phase 2 of the IVS project would not be built. As a result, views of the 300 MW Alternative from Dunaway Campground would be seen at distances of 4 mi or more, approaching the background distance zone. At that distance, the project would be evident but would exhibit a moderately low degree of contrast. Color and texture contrast could be moderate, but form and line contrast would be weak due to the level,

oblique angle of view and the small part of the field of view occupied by the 300 MW Alternative. Similarly, visual dominance of the project would be low in scale at this distance.

In the context of high viewer sensitivity, the impacts of the 300 MW Alternative at this distance would not be substantial.

KOP 7 is from Overlook Campground on the Anza Trail at a distance of approximately 1 mi from the project site, or middle-ground distance. However, approximately half of the overall visual field (to the north and west) that would be occupied by the IVS project would also be occupied under the 300 MW Alternative. The 300 MW Alternative would still exhibit strong color and texture contrast and strong spatial dominance, becoming the most dominant feature in views to the northwest. The 300 MW Alternative would demand attention, could not be overlooked, and would be dominant in the landscape. However, the overall contrast and dominance of the 300 MW Alternative would be substantially less than under the IVS project.

In the context of high overall viewer sensitivity in foreground and middle-ground viewpoints in the Yuha Desert ACEC, impacts from KOP 7 and other parts of the Anza Trail in proximity to the 300 MW Alternative would be substantial.

KOP 8 is from the vicinity of the Yuha Geoglyphs, also on the Anza Trail, at a distance of approximately 3 mi, approaching background distance. Because viewer exposure to the site from this viewpoint is primarily to the western, Phase I parts of the IVS project, the impacts under the 300 MW Alternative would be very similar to those under the IVS project. At this distance, the 300 MW Alternative would be very evident but would exhibit a moderate degree of contrast. Color and texture contrast could be moderately high, but form and line contrast would be weak due to the level, oblique angle of view and the small part of the field of view occupied by the 300 MW Alternative. Similarly, the visual dominance of the 300 MW Alternative would be moderate in scale at this distance.

In the context of high viewer sensitivity, the visual impacts of the 300 MW Alternative at this distance would be adverse, but not substantial.

From other destinations in the Yuha Desert ACEC, such as Yuha Well, fossil shell beds, and segments of the Anza Trail south of the Yuha Geolyphs, and Highway 98 and the surrounding areas, the 300 MW Alternative would not be visible due to intervening terrain of washes and low hills.

Glare and Light Impacts

As discussed under the IVS project, in the absence of specific photometric data, it is anticipated that the 300 MW Alternative would have the potential to be a source of intrusive and distracting diffuse reflected light under certain conditions, particularly when an entire row of SunCatcher units could be visible in a near-vertical position to approaching motorists at hours near sunrise and sunset. This impact would require mitigation similar to that described above for the IVS project. The potential distracting nuisance glare, and a strobe or flicker effect of bright reflection on passing motorists would be comparatively less than under the IVS project due to the reduced overall highway frontage under the 300 MW Alternative. This would therefore result in a shorter duration of exposure, but would still represent several miles of potential exposure under certain conditions. Though less than under the IVS project, these effects of the 300 MW Alternative would remain substantial.

Night lighting under the 300 MW Alternative would be similar to that described above for the IVS project and would require similar mitigation.

The operation of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in differences in visual, glare, and nighttime lighting impacts compared to the 300 MW Alternative as described above. This is because these proposed modifications would be designed, function, and in the same general locations and approximately the same overall site size as the facilities evaluated for the original 300 MW Alternative.

Project Construction Impacts

It is expected that the project laydown area under the 300 MW Alternative would be proportionately smaller than under the IVS project, both in extent and duration. However, if the laydown area is located in the same general location and adjoining the highway at Dunaway Road, it would still potentially have strong contrast and represent a substantial impact to viewers on I-8. If the lower overall area needed allows for a greater setback from I-8, the potential impacts to viewers on I-8 during construction could be reduced considerably under the 300 MW Alternative. Potential long-term impacts associated with ground disturbance of the laydown area would be similar to those described under the IVS project.

The potential impacts of project grading and construction would be considerable under the 300 MW Alternative and comparable to those of the IVS project. Grading would result in strong color contrast from soil surface disturbance. Project construction would include a highly industrial scene of assembly and installation of the SunCatcher units. These short-term adverse visual impacts of the 300 MW Alternative are considered substantial and unavoidable.

The construction of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in differences in visual, glare, and nighttime lighting impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed, and in the same general locations as the facilities evaluated for the IVS project.

4.16.4.4 Drainage Avoidance #1 Alternative

The Drainage Avoidance #1 Alternative would occupy the same site as the IVS project but would have fewer SunCatchers in order to avoid the placement of permanent structures in the major drainages. However, these differences would not be readily apparent to most viewers, and would make very little difference in terms of overall effect on all viewer groups within the viewshed. Like the proposed IVS project, the Drainage Avoidance #1 Alternative would substantially degrade the existing visual character and quality of the project site and its surroundings, including motorists on I-8, recreational destinations in the Yuha Desert ACEC, and segments of the Anza Trail, resulting in substantial adverse visual impacts. Overall, the level of short-term and long-term visual impacts under the Drainage Avoidance #1 Alternative would be similar to the IVS project.

The construction and operation of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #1 Alternative will not result in differences in visual, glare, and nighttime lighting impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed, operated, and in the same general locations as the facilities evaluated for the IVS project.

4.16.4.5 Drainage Avoidance #2 Alternative

The Drainage Avoidance #2 Alternative would occupy a smaller part of the project site than the IVS project. Under the Drainage Avoidance #2 Alternative, development would be concentrated in the middle part of the IVS project site, with no development on the east and west sides of the overall project site.

The Drainage Avoidance #2 Alternative would be smaller in area than the IVS project but would result in similar impacts as the IVS project although those impacts would be somewhat more concentrated in the middle of the site. The visual impacts of the Drainage Avoidance #2 Alternative would be substantial and adverse to I-8 and Yuha Desert ACEC viewers, and

unavoidable. However, like the 300 MW Alternative, the degree and extent of those impacts would be substantially less than under the IVS project.

The construction and operation of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #2 Alternative will not result in differences in visual, glare, and nighttime lighting impacts compared to the IVS project as described above although those impacts would be somewhat more concentrated in the middle of the site. This is because these proposed modifications would be designed, constructed, and operated the same as the facilities evaluated for the IVS project.

4.16.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, right-of-way (ROW) grant for the IVS project would not be approved by the BLM and the BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the views of the site are not expected to change noticeably from existing conditions under this No Action Alternative and, therefore, this No Action Alternative would not result in adverse visual, light, and glare impacts. However, the project site could become available to other uses that are consistent with BLM's land use plan. In addition, in the absence of this project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects would have similar impacts in other locations.

4.16.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, ROW grant for the proposed IVS project would not be approved by the BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan.

Because the CDCA Plan would be amended so no solar projects can be approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition under this No Action Alternative, with no new structures or facilities constructed or operated on the site. As a result, the views of the site are not expected to change noticeably from existing conditions under this No Action Alternative. Therefore, this No Action Alternative would not result in adverse visual, light, and glare impacts. However, in the absence of this project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects would have similar impacts in other locations.

4.16.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the ROW grants for the IVS project would not be approved by the BLM but the BLM would amend the CDCA Plan to allow other solar projects on the site.

Because the CDCA Plan would be amended under this No Action Alternative to allow for solar energy generation, it is possible views of the site could change substantially based on the required buildings and structures on the site for the different solar technologies. Different solar technologies could create different visual effects based on the technology components when compared to the IVS project. It is expected that the views of the site could change substantially with a different solar technology, similar to the changes in views under the IVS project. Therefore, this No Action Alternative could result in adverse visual, light, and glare impacts similar to the impacts under the IVS project.

4.16.5 Cumulative Impacts

The cumulative impacts study area and cumulative projects considered in the cumulative impacts analysis for visual resources are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

Visual resources in the general geographic area on and around the project site have been impacted by past and currently approved projects. The U.S. Gypsum Plant is the most visually prominent existing feature in the general viewshed and detracts from the overall scenic intactness of this viewshed, presenting a prominent man-made, industrial feature into views within a radius of a few miles, including the IVS project site. The Plaster City OHV Open Area also has visual effect in the area, including near the IVS project site, as a result of the general visual disturbance of the terrain in the Plaster City OHV Open Area due to periodic heavy OHV use that accounts for its moderate to moderately low visual quality. Most of the cumulative

projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to visual resources less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects. It is anticipated that reasonably foreseeable projects in the area, including a number of energy generation projects, would contribute to substantial visual changes in this area. These visual changes could include construction and operation of aboveground solar equipment and wind turbines, overhead transmission lines, and mixed-use development.

The construction and operation of the IVS project could contribute to cumulative adverse visual impacts in the area as discussed in Sections 4.16.5.1 through 4.16.5.3, below.

4.16.5.1 Construction

As described earlier, the construction of the IVS project is expected to result in short term adverse visual impacts related to views of construction activities, materials, and disturbed soil surfaces. It is possible that some of the planned projects in the area may be under construction or operational at the same time as the IVS project. As a result, the IVS project and any other projects under construction or operational at the same time could contribute to substantial short-term adverse visual impacts. The IVS project would contribute substantially to these possible short-term cumulative adverse visual impacts because of the large area of ground disturbance which would adversely affect the overall degree, extent, and intensity of those short-term effects and, depending on what other construction is occurring concurrently, the IVS may be the single greatest contributor to the overall short-term adverse visual impacts.

4.16.5.2 Operation

The operation of the IVS project is expected to result in long-term adverse visual impacts. It is expected that some of the cumulative projects in the area may be under construction or operational at the same time as the IVS project. As a result, there may be substantial long-term adverse impacts during construction and operation of those cumulative projects. Therefore, the IVS project could contribute substantially to long term adverse cumulative visual impacts due to its vast extent, and the high level of change to visual character and quality that it would contribute to the viewshed. It could essentially form a part of a very large corridor of wind and solar development reaching from the Imperial Valley substation to the border of Imperial County to the west.

4.16.5.3 Decommissioning

The decommissioning of the IVS project is expected to result in adverse impacts related to visual resources similar to the project construction impacts. It is unlikely that the construction or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of this project, because the decommissioning is not expected to occur for approximately 40 years. The period of decommissioning impacts, however, is longer than 40 years because the period of full visual recovery of the highly disturbed landscape would not be expected to occur for several more decades. It is not known when decommissioning of other cumulative projects, particularly adjacent wind projects, would take place. However, due to the potentially very long period of decommissioning impacts, some overlap and therefore some cumulative impact, would be anticipated. As a result, there may be cumulative adverse visual impacts as a result of the decommissioning of the IVS project in combination with effects of decommissioning of nearby cumulative projects.

4.16.5.4 Cumulative Impact Summary

As discussed above, the anticipated visual impacts of the construction and operation of the IVS project, in combination with past and foreseeable future projects, in the West Mesa/Yuha Desert region and the southern California desert are cumulatively considerable, and the contribution of the IVS project to the cumulatively considerable impact would be substantial and adverse.

4.16.6 Mitigation, Project Design Features, and Other Measures

VIS-1 **Surface Treatment of Project Structures and Buildings.** The project owner will paint the box structures (maintenance building, main services complex, etc.) on the site per BLM and CEC specifications.

Electrical features and features used in the production and transmission of electricity (transformers, bus bars, poles, lattice structures, SunCatchers) will be painted with a blue-grey coloring. This measure includes coloring of security fencing with vinyl or other non-reflective coating; or with slats or similar semi-opaque, non-reflective material, to blend to the greatest feasible extent with the background soil.

The project owner shall submit for BLM Authorized Officer review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan will include:

A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

B. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;

C. One set of color brochures or color chips showing each proposed color and finish;

D. A specific schedule for completion of the treatment; and

E. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner will not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by BLM's Authorized Officer. Subsequent modifications to the treatment plan are prohibited without BLM's Authorized Officer approval.

VIS-2 **Temporary and Permanent Exterior Lighting.** To the extent feasible, consistent with safety and security considerations, the project owner will design and install all permanent exterior lighting and all temporary construction lighting such that (a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; (b) lighting does not cause excessive reflected glare; (c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; and will employ on-demand lighting technology such as a radar-triggered audio-visual warning system; d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances. The project owner will submit to BLM's Authorized Officer for review and approval and simultaneously to Imperial County for review and comment a lighting mitigation plan that includes the following:

A. The locations and directions of light fixtures will take the lighting mitigation requirements into account;

B. The lighting design will consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

C. The lighting will incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

D. Light fixtures that are visible from beyond the project boundary will have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

E. All lighting will be of minimum necessary brightness consistent with operational safety and security; and

F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) will have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

VIS-3 **Realignment of Proposed Transmission Interconnection.** To reduce the prominence of the proposed new segment of transmission line paralleling I-8, the applicant shall set back the transmission line at least 1/2 mile from I-8 within the project site. This measure applies only to that segment of the proposed transmission line paralleling I-8 within the project site boundary.

VIS-4 **Setback of SunCatchers from Highway I-8.** To reduce the visual dominance and glare effects of the SunCatchers to motorists on I-8, the applicant will employ a combination of measures as necessary, including set-backs of the nearest SunCatcher units to a distance of 500 feet from the adjoining road or as necessary to avoid excessive glare and reduce the visual height and dominance of SunCatchers, slatted fencing as described under Measure VIS-6, and set-backs of SunCatcher units from project fencing.

VIS-5 **Beneficial Assessment to NPS/BLM for Impacts to Anza Trail.** To off-set unavoidable adverse impacts to visitors on the Anza Trail and Yuha Desert ACEC, the project owner will contribute funds to the National Park Service (NPS) and BLM, specifically to provide improvements to benefit visitors on the Anza Trail. Such improvements could include, but not be limited to, interpretive displays or exhibits, improvements to use areas, mounted telescopes, or other improvements to be determined by the NPS and BLM through preparation of a Comprehensive Interpretive Plan for the Anza Trail as required in Measure REC-2. (Refer to Section 4.12, Recreation, for the language of that measure.)

VIS-6 **Reflective Glare Mitigation.** The project owner will develop and implement a glare mitigation plan that minimizes visibility of the SunCatcher mirrors to both

east- and west-bound traffic on I-8 using one or more measures, which may include but are not limited to 20-foot tall slatted fencing, particularly at the eastern and western boundaries near the highway; earth berms, and/or an increase in the setbacks of the SunCatcher units from the road; and must include a SunCatcher Mirror Positioning Plan (MPP) describing how the outermost rows of SunCatchers could be positioned to avoid or minimize the most intensive potential glare incidents on motorists as called for under Measure TRANS-4. The MPP will include a glare complaint resolution form to be distributed to the BLM and the NPS.

VIS-7 **Setback and Revegetation of Staging Area.** To minimize the visual prominence of the proposed staging area to motorists on I-8, the project owner will provide a revised site plan for staging that includes a set-back of at least ¼-mile or more from the highway, and a description of measures to identify and address biological and cultural issues potentially connected to that revised site plan. In addition, the project owner will provide a re-vegetation plan describing how the staging site will be restored following construction. The plan will call for beginning of restoration of the site within the shortest feasible time following completion of construction.

4.16.7 Summary of Adverse Impacts

Table 4-70 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to visual resources.

As shown in Table 4-70, the IVS project and the other Build Alternatives would substantially degrade the existing visual character and quality of the site and its surroundings. Under the IVS project, an area of roughly 10 square miles, including over 6.5 mi of frontage on I-8, would experience a dramatic visual transformation from a predominantly natural desert landscape to one of a highly industrial character, strongly affecting motorists on I-8. The character and quality of views from some recreational destinations in the Yuha Desert ACEC, including segments of the Anza Trail, would be strongly affected. Given the moderately high-to-high level of viewer sensitivity of these affected viewpoints, the visual impacts of the IVS project are considered substantial and adverse. Mitigation is provided that would reduce or avoid project impacts to the extent feasible.

Table 4-70 Summary of Visual Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	The IVS project would result in permanent visual changes to the desert landscape and would introduce development in an area that is visually open and predominantly free of development. The visual impacts of project grading and construction would be considerable and would include a highly industrial scene of assembly and installation of the SunCatcher units. The project will introduce new sources of glare from the SunCatchers and nighttime lighting. Visual recovery from land disturbance after decommission-ing could occur, although only over a long period of time, with implementation of a comprehen-sive revegetation program.	**Construction Measures** *VIS-7:* Setback and revegetation of staging area **Operations Measures** *VIS-1:* Surface treatment of project structures and buildings *VIS-2:* Temporary and permanent exterior lighting *VIS-3:* Realignment of proposed transmission interconnection *VIS-4:* Setback of SunCatchers from I-8 *VIS-5:* Beneficial assessment compensation to NPS/BLM for impacts to Anza Trail *VIS-6:* SunCatcher MPP	Given the high level of viewer sensitivity of the area and the fact that the site is undeveloped the visual impacts of the IVS project after mitigation are considered unavoidable and adverse after mitigation for construction and operations. The visual impacts of the IVS project in combination with other cumulative projects in the West Mesa/Yuha Desert region, and the southern California desert are considered cumulatively unavoidable and adverse after mitigation. There may be cumulative adverse visual impacts as a result of the decommissioning of the IVS project in combination with effects of decommissioning of nearby cumulative projects and the time span involved for recovery of the landscape.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Similar to the Agency Preferred Alternative, but because of the smaller development area, the degree and extent of those impacts would be substantially less than under the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	The visual impacts of this Alternative would be similar to the impacts under the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Similar to the Agency Preferred Alternative, but because of the smaller development area, the degree and extent of those impacts would be less extensive than under the IVS project and the Agency Preferred Alternative	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same as or similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially the same as or similar to the IVS project and the Agency Preferred Alternative.	Potentially the same as or similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; I-8 = Interstate 8; IVS = Imperial Valley Solar; MPP = Mirror Positioning Plan; MW = megawatts; NPS = United States National Park Service; ROW = right-of-way.

The visual impacts of the 300 MW Alternative would remain substantial and adverse to I-8 and Yuha Desert ACEC viewers, however, the degree and extent of those impacts would be substantially less than those of the IVS project.

The visual impacts of the Drainage Avoidance #1 Alternative would be very similar to the impacts of the IVS project and would be substantial and adverse. The differences in the visual effects of these two alternatives would be minor.

Similar to the impacts of the 300 MW Alternative, the visual impacts of the Drainage Avoidance #2 Alternative would be much less extensive than under the IVS project, but would remain substantial and adverse.

The anticipated visual impacts of the IVS project and the other Build Alternatives, in combination with past and foreseeable future projects in the West Mesa/Yuha Desert region, and in the southern California desert are considered cumulatively considerable and the contribution of the IVS project to that cumulative impact is substantial and adverse.

Diffuse reflection from the SunCatchers could be an intrusive and distracting nuisance to motorists under at least certain conditions, particularly when an entire row of units could be visible in a near-vertical position to approaching motorists at hours near sunrise and sunset. Mitigation would reduce potential glare impacts so they would no longer be substantial.

4.17 Hydrology, Water Use, and Water Quality

4.17.1 Methodology

The analysis specifically focuses on the potential for the IVS project and the other alternatives to:

- Cause accelerated wind or water erosion and sedimentation on the IVS project site;
- Exacerbate flood conditions on and in the vicinity of the IVS project site;
- Adversely affect surface or groundwater supplies;
- Degrade surface or groundwater quality; and
- Comply with all applicable laws, ordinances, regulations, and standards (LORS) and state policies.

4.17.2 Definition of Resource

The resources considered in this analysis are surface and ground waters on, under, and in the vicinity of the IVS project site.

4.17.3 Applicable Regulations, Plans, and Policies/Management Goals

4.17.3.1 Clean Water Act

The United States Army Corps of Engineers (Corps) has determined that 840 acres (ac) of the project site are jurisdictional waters of the U.S. under Clean Water Act (CWA) Section 404. Of those 840 ac, approximately 165 ac of these waters will be permanently impacted and 5 ac will be temporarily impacted. The United States Environmental Protection Agency (EPA) Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] 230 et seq.) are substantive environmental criteria used by the Corps to evaluate permit applications. Under these guidelines, an analysis of practicable alternatives is the primary tool used to determine whether

a proposed discharge can be authorized. An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of the overall project purpose (40 CFR Part 230[a][2]). The guidelines suggest a sequential approach to project planning such that the Corps must first consider avoidance and minimization of impacts to the extent practicable. Mitigation for unavoidable impacts to waters of the U.S. is addressed only after the analysis has determined the Least Environmentally Damaging Practicable Alternative (LEDPA). The Corps has preliminarily identified the Agency Preferred Alternative to be the LEDPA as proposed in the *Draft 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* provided in Appendix H. The Corps participated in the development of this alternative and is currently in the process of a detailed evaluation of the analysis along with the EPA. A Final 404(b)(1) Alternatives Analysis and LEDPA determination will be included as part of the Corps' Record of Decision (ROD). Once the LEDPA is determined, the Corps can issue a Standard Individual Permit for unavoidable impacts with Special Conditions that further minimizes the potential indirect effects of the project on avoided areas and requires mitigation to fully replace the functions and services resulting from the unavoidable impacts to streams. The LEDPA will be in compliance with Section 404 of the Clean Water Act.

4.17.3.2 Porter-Cologne Water Quality Control Act/State Water Board Resolution No. 68 16

Measures SOIL&WATER-1 through SOIL&WATER-9 would satisfy the requirements of the Porter-Cologne Water Quality Control Act and State Water Resources Control Board (SWRCB) Resolution No. 68-16, and other relevant regulations as administered by the Regional Water Quality Control Board (RWQCB).

4.17.3.3 State Water Resources Control Board Resolution 75-58 and Energy Commission's 2003 Integrated Energy Policy Report

The SWRCB Resolution 75-58, the California Energy Commission's (CEC's) 2003 Integrated Energy Policy Report, and The Warren-Alquist Act relate to the use of fresh inland water for power plant cooling. The IVS project would not use water for power plant cooling, but is in compliance with the spirit of these regulations by using reclaimed water for mirror washing. No fresh inland water would be used except for potable water.

4.17.3.4 Public Resources Code, Sections 25300 through 25302

Through compliance with Measure SOIL&WATER-2, information required to conduct assessments and forecasts of potable and industrial water consumption by power plants is achieved.

4.17.3.5 California Code of Regulations Titles 17, 22, 23, 24, and 27

It has been determined that the proposed project would satisfy the requirements of the California Code of Regulations Titles 17, 22, 23, 24, and 27 by upgrading the SWWTP to supply tertiary treated recycled water in accordance with Title 17 and 22 requirements as is proposed by the applicant and with the adoption of Measures SOIL&WATER-2, SOIL&WATER-3, SOIL&WATER-4, SOIL&WATER-7, SOIL&WATER-8, and SOIL&WATER-9.

4.17.3.6 Imperial County Land Use Ordinance, Title 9

It has been determined that the proposed project would satisfy most requirements of Imperial County Land Use Ordinance, Title 9 by adoption of Measures SOIL&WATER-1, SOIL&WATER-5, SOIL&WATER-6, and SOIL&WATER-8. The project may not satisfy the Imperial County Land Use Ordinance with regard to stream morphological changes that could result in excess sediment production from the site. These County Ordinances would apply to the privately-owned land on the project site but not the BLM land.

4.17.3.7 California Water Code Section 1211

It has been determined that the proposed project would satisfy requirements of California Water Code Section 1211 with the adoption of Measure SOIL&WATER-9.

4.17.4 Proposed Action and Alternatives: Direct and Indirect Impacts

The potential impacts of the IVS project, the 709 MW Alternative (the Agency Preferred Alternative), the other Build Alternatives, and the No Action Alternatives are described in the following sections. Additional discussion of the potential effects of the incorporation of the four applicant-proposed modifications described in Chapter 2, Alternatives Including the Proposed Action, in the IVS project and the other Build Alternatives, and the modifications to avoid

impacts to drainages, cultural resources, and the flat-tailed horn lizard in the Agency Preferred Alternative is also provided in this section.

4.17.4.1 IVS Project: 750 MW Alternative

Construction Impacts

Soil Erosion Potential by Wind

Construction of the IVS project is expected to take approximately 40 months to complete. Construction would include soil excavation, clearing, grading, installation of solar disks, installation of the laydown area, and construction of the Main Services Complex, roads, utilities, water pipeline, transmission line, sediment and retention basins, substation, and other ancillary features. Water will be used on site for dust control. That water would come from the off-site private well or the SWWTP.

Potential impacts to soils related to increased erosion from wind and runoff on disturbed areas, or release of hazardous materials, are possible during construction. Potential storm water impacts could result if increased runoff flow rates and volume discharge from the IVS project site were to increase flooding and sedimentation downstream. Dunaway Road and the area upstream of the Westside Main Canal could be affected by increased sediment deposition. Water quality could be impacted by increased sediment load from the ground surface and from discharge of hazardous materials released during construction.

Table 4-71 summarizes the anticipated disturbance on the site during construction of the IVS project. The total construction disturbance area would be 3,000 ac, of which 2,175 ac would be in the SunCatcher array, the rest in other construction as detailed in this table.

Table 4-71 Estimated Disturbed Area Summary

Project Component	Construction Disturbance	Operations Permanent Disturbance	Proposed Length	Comments
Off-Site Development				
Off-site access road	4.5 ac	3.6 ac	1.3 mi	30 ft width for roadway and drainage
Off-site transmission line	91.6 ac	Included below	7.6 mi	50 ft each side of center
Tower structures	Included above	1.2 to 1.4 ac	N/A	85 to 100 towers x 1,024 sf per tower
Waterline and pumping station	8.0 ac	1 ac	3.4 mi	9.5 ft each side of center
Off-site electrical and communications overhead service	0.3 ac	Included below	539 ft	12 ft each side of center
Poles	Included above	26 sf	N/A	2 poles x 13 sf per pole
Subtotal	**104.4 ac**	**4.6 ac**		
On-Site Balance-of-Plant Development				
Construction staging and construction administration area east of Dunaway Road	100 ac	N/A	N/A	N/A
On-site construction laydown area	12 ac	N/A	N/A	N/A
Site boundary fence line	29.9 ac	14.9 ac	20.5 mi	12 ft width construction access; 3 ft each side of the fence
Site paved roadways	137.6 ac	137.6 ac	25.2 mi	45 ft width for roadway & drainage
Unpaved perimeter roadways	16.2 ac	16.2 ac	11.2 mi	12 ft wide
Main Services Complex, parking and services	14.4 ac	14.4 ac	N/A	N/A
Assembly buildings and storage	14 ac	N/A	N/A	N/A
On-Site Wet and Dry Utilities Access				
Water pipeline	8.7 ac	N/A	3.8 mi	9.5 ft each side of center
On-site electrical and communications overhead service	3.8 ac	N/A	6,914 ft	12 ft each side of center
IVS Substation	7.7 ac	5.2 ac	N/A	650 ft by 350 ft

Project Component	Construction Disturbance	Operations Permanent Disturbance	Proposed Length	Comments
On-site transmission line 34.1 ac N/A 2.8 mi 50 ft each side of center line	34.1 ac	N/A	2.8 mi	50 ft each side of center
Transmission access road	Included above	4.1 ac	2.8 mi	12 ft wide
Transmission tower structures	Included above	0.5 to 0.7 ac	N/A	35 to 40 towers at 1,024 sf per tower
34.5 kV overhead runs to Solar 2A Substation	4.0 ac	N/A	N/A	10.95 mi by 12 ft wide with a significant portion overlapping other construction disturbed areas (75%)
Poles	Included above	0.1 ac	N/A	N/A
34.5 kV runs to overhead lines	5.2 ac	N/A	N/A	N/A
Subtotal	**271.31 ac**			
Solar Field Development = 500 by 1.5 MW Solar Groups 2,3				
North-south access routes	245 ac	245 ac	168 mi	1,709 ft per 1.5 MW (0.47 ac total) based on 12 ft-wide road
East-west access routes	148.3 ac	148.3 ac	102 mi	1,033 ft per 1.5 MW (0.28 ac total)
Electrical Collection System				
600 V underground	35 ac	N/A	576 mi	5,850 ft per 1.5 MW (0.52 ac total) based on 2 ft each side of center
34.5 kV underground	20 ac	N/A	45 mi	460 ft per 1.5 MW (0.06 ac total) based on 3 ft each side of center
SunCatcher Installation				
North-south access/SunCatcher	440 ac	440 ac	See total area	1,600 ft per 1.5 MW (0.88 ac total) based on 20 ft by 32 ft access/unit

Project Component	Construction Disturbance	Operations Permanent Disturbance	Proposed Length	Comments
East-west access/SunCatcher	1,735 ac	1,735 ac	See total area	4,200 ft per 1.5 MW (3.47 ac total) based on 36 ft by 70 ft access/unit
Subtotal	2,623.4 ac	2,568.4 ac		
Total Area	3,075.1 ac	2,746.6 ac		

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table General Note 1: Assumes 750 MW net development of 30,000 SunCatchers.

Table General Note 2: During installation of the SunCatchers, only 50% of the total land would be disturbed. The modularity of the SunCatcher design and off-site manufacturing would enable a phased deployment, thereby minimizing the proportion of the overall site that is disturbed at any give time during construction.

Table General Note 3: The plan site layout minimizes traffic road operations of the Project.

Table Key: ac = acre/acres; ft = foot/feet; kV = kilovolt; mi = mile/miles; MW = megawatts; N/A = not applicable; sf = square feet; V = volts.

The soils on the project site described earlier in Table 3-26 are highly susceptible to wind erosion under normal conditions. The scarcity of vegetation on the site contributes to a natural propensity for wind erosion, although the potential for wind erosion is expected to be less in the watercourses than in the upland areas due to much higher density of vegetation in the riparian areas. The potential soil loss due to wind under existing conditions was estimated to be more than 100 tons per acre per year (t/ac/yr) for the IVS project site. This soil loss may more accurately be considered displacement, because soil lost by wind in one area of the Yuha Desert would likely settle in another, so under natural conditions, there is no overall net loss of soil in any given area. Disturbance by project grading and vegetation removal in a specific area will leave soil particles in that area more vulnerable to detachment by wind, resulting in more displacement. Wind-related soil loss is expected to occur on the IVS site during construction, given the overall size of the disturbed area, that soil loss could be substantial during construction depending on wind conditions. This could result in the displacement of topsoil on the site, as well as air quality and dust nuisance problems. Because the prevailing wind in the area for 11 months of the year is toward the east, dust from the IVS project site could potentially reach Seeley, El Centro, and the neighboring agricultural areas.

A Draft Drainage, Erosion and Sediment Control Plan (DESCP)/SWPPP has been prepared for the IVS project. It describes a series of best management practices (BMPs) intended to reduce wind erosion during construction, including applying water or other dust palliatives as to prevent or alleviate dust nuisance generated by construction activities, covering small stockpiles or other areas subject to wind erosion, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, haul truck covers, installing vegetation, mulching, minimizing surface areas to be disturbed, limiting on-site vehicle traffic speed, controlling the number and activity of vehicles on the site, and application of soil binders.

Implementation of the Final DESCP as described later in Measure SOIL&WATER-1 would ensure adequate BMPs are in place to address and mitigate potential erosion and loss of soil from wind.

Soil Erosion Potential by Water

The erosion potential by water during construction of the IVS project is expected to increase as a result of loss of vegetative cover, removal of surface crust and desert pavement, and increased local sediment transport through creation of localized gullies and rills on newly graded slopes. The Draft DESCP described above also identifies BMPs for water erosion control including measures such as silt fences, sediment barriers, grading restrictions, soil binders,

temporary stabilized drains, brush barriers, sediment basins, strawbale barriers, fiber rolls, and sand bags.

Soil erosion rates were estimated using the Revised Universal Soil Loss Equation (RUSLE2). The RUSLE2 equation estimates erosion-related soil loss from a land surface using climate, soil conditions, topography, land cover, support (best management) practices, and hydraulic resistance. The results of that analysis are shown in Table 4-72. Those results show that the Rositas soil association, which covers all the Phase I area and most of the Phase II area, has the potential for producing approximately 0.042 to 0.42 t/ac/yr water-borne sediment. Assuming Rositas Silt Loam soils, this amounts to about 8.4 cubic feet per acre per year (cf/ac/yr) which is a reflection of the very low rainfall of the area. At this rate, the worst-case annual watershed sediment production potential from the 3,075 ac disturbed area under the IVS project would be approximately 950 cubic yards (cy). The analysis also shows that the proposed BMPs would be sufficient to mitigate sediment production during construction. An independent RUSLE2 evaluation was made using very preliminary and simplified BMP inputs, with similar preliminary results.

Refer to the *Draft 404B-1 Alternatives Analysis* in Appendix H for discussion of the sediment transport associated with each alternative. Measure SOIL&WATER-1 would ensure that sediment basins and other construction BMPs are constructed in a timely manner to mitigate potential runoff erosion and loss of soil from wind.

Construction Water Use

As described in the following section, the Seeley Wastewater Treatment Plant (SWWTP), at 1898 West Main Street in Seeley, approximately 13 mi east of the IVS project site, is anticipated to supply treated wastewater for the IVS project for mirror washing and other project uses except potable water. An Environmental Impact Report (EIR) is currently being prepared by Imperial County for an upgrade to the plant to ensure that it can meet the long-term needs of the IVS project.

Table 4-72 Soil Erosion Rates

Soil Type	Existing (ton/ac/yr)	Construction – Cut Area with No BMPs (ton/ac/yr)	Construction – Fill Area with No BMPs (ton/ac/yr)	Construction – Average with No BMPs (ton/ac/yr)	Construction with BMPs (ton/ac/yr)	Operations with BMPs (ton/ac/yr)
Rositas Sand and Fine Sand, 0% to 9% Slopes	0.042	0.042	0.14	0.091	<0.042	<0.042
Rositas Loamy Fine Sand, 0% to 2% Slopes	0.082	0.081	0.25	0.17	<0.082	<0.082
Rositas Silt Loam 0% to 2% Slopes	0.42	0.42	1.3	0.86	<0.42	<0.42
Meloland Fine Sand	0.017	0.017	0.054	0.036	<0.017	<0.017
Vint Fine Sandy Loam	0.13	0.13	0.41	0.27	<0.13	<0.13
Indo Loam	0.25	0.25	0.76	0.51	<0.25	<0.25

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table General Note: Soil erosion rates reflect sheet flow and rill erosion caused by storm water runoff and were calculated using the Revised Universal Soil Loss Equation (Version 2), RUSLE2 computer program.

Table Key: BMP = Best Management Practice; ton/ac/yr = tons per acre per year.

However, at this time, it does not appear that the plant improvements will be completed by the time water is needed for the construction of the IVS project. The applicant has identified an alternative water source and had concurred with including that water source in the IVS project, the Agency Preferred Alternative, and the other Build Alternatives. That alternative water supply is anticipated to be used for during the initial 6 months to 3 years of construction and operation of the project. The alternative water supply would be provided through the Dan Boyer Water Company in Ocotillo. The water source is potable and permitted for use by construction or personal consumption and would be pumped from State Well No. 16S.9E-36G4. This well is approximately 3.5 mi southwest of the western boundary of the project site, immediately south of County Road S22 exit (Exit 89) on I-8. The extraction of water from this well is permitted for at a rate of 40 acre-feet per year (afy) or approximately 41,775 gallons per day (gpd). The well is 10.75 inches (in) in diameter, 560 ft deep and is screened from 340 to 560 ft below ground surface (bgs). State Well No. 16S.9 E-36G4 operates under an existing Conditional Use Permit and is permitted for the extraction of water. Water from this well would be delivered to a point inside the Ocotillo/Coyote Wells Groundwater Basin and would be used for a project that lies primarily over that basin, so that no water export permit would be required. In addition, the temporary nature of the water use would only continue under water is made available from the SWWTP.

This well, in the Ocotillo/Coyote Wells Groundwater Basin (OCWGB), part of the sole source aquifer. The use of water from this well will not introduce contaminants into the aquifer and, therefore, is in compliance with the Sole Source Aquifer program. Further discussion of the use of the well is provided in Appendix B, Determination of NEPA Adequacy.

The water needed during construction for dust control and ground preparation for concrete pours was estimated to average 45,000 gallons per day (gal/day) and not exceed 90,000 gal/day, which is within the agreed-upon delivery of water from the SWWTP for the IVS project. Measure SOIL&WATER-2 would ensure viability of a water supply, whether from the Dan Boyer Company well or the SWWTP and would ensure that water use would be within the amount evaluated for the IVS project. With implementation of Measure SOIL&WATER-2, no adverse water supply impact is anticipated as a result of water needs during construction.

The on-site concrete-lined evaporation ponds would be used as storage reservoirs for construction water prior to completion of the water pipeline from the SWWTP. Water quality impacts could occur to groundwater through infiltration of this treated wastewater. The Colorado River RWQCB will require monitoring of groundwater during this period. Compliance with Measure SOIL&WATER-3 will ensure no adverse impact to groundwater from storage of this water in the evaporation ponds.

Potable water for the construction workforce will be supplied from an as yet to be determined offsite source. Measure SOIL&WATER-4 would ensure that this water comes from a water purveyor licensed to provide potable water in and that the supply provided to IVS project is within the licensed capabilities of the purveyor, ensuring no adverse water supply impact for construction potable water.

Storm Water

Storm water runoff from the site during construction could include excess sediment, trash, oils, grease, coolants, vehicle fluids, solvents, paints, cleaners, asphaltic emulsions, mortar mix, spilled fuel, vehicle fluids and other construction-related contaminants from the construction activity. All construction waste, including hazardous wastes, will be collected and removed from the site on a regular schedule. The IVS project construction will require a Storm Water Pollution Prevention Plan (SWPPP) which would specify BMPs to prevent all construction pollutants including erosion products from contacting storm water, eliminate or reduce nonstorm water discharges to waters of the U.S., and provide for inspection and monitoring of BMPs. Construction storm water BMPs would include temporary soil stabilization techniques such as scheduling activities to minimize land disturbance during the rainy season; marking areas not to be disturbed; using geotextiles, mats, plastic covers, or erosion blankets to stabilize disturbed areas; the use of soil binders, earth dikes, drainage swales, lined ditches, flow velocity protection measures, silt fences, straw bales, fiber rolls, and dust palliatives; tracking control at site entry/exit points; and stabilized construction roads. Measures SOIL&WATER-1 and SOIL&WATER-5 are intended to ensure adequate control of construction storm water pollutants.

Wastewater

Portable chemical toilets would be used for construction sanitary wastes. Sanitary wastewater from these toilets would be periodically pumped to a tanker truck by a licensed contractor and shipped to a sanitary water treatment plant. Measure SOIL&WATER-5 will ensure proper handling of construction sanitary wastes.

Construction Wastes

Recyclable construction waste material including scrap wood, steel, glass, plastic, and paper would be collected and taken to a recycling facility at regular intervals not to exceed 30 days. Hazardous construction waste including empty containers, solvents, oils, paint, cleaners, and adhesives would be collected on site and returned to the vendor or taken to a hazardous waste facility at regular intervals not to exceed 90 days. Waste oil and other fluids from construction

vehicles would be collected on site and recycled or disposed of at a hazardous waste facility at regular intervals not to exceed 90 days. Lead acid, alkaline, gel cell, nickel, and cadmium batteries would be stored on site and taken to an authorized waste recycling facility at regular intervals not to exceed 90 days.

Non-hazardous residual solids (dirt and concrete particles) from the retention ponds would be excavated at the end of construction and spread on-site. Construction wastes are addressed in more detail in Section 4.11, Public Health and Safety, and Hazardous Materials**.** Measures WASTE-3 (Construction Waste Management Plan) and WASTE-6 (Reuse/Recycling Plan) provided in that section address construction wastes which will also further ensure minimal water quality impacts from construction wastes.

Construction Water

Water demands during construction of the IVS project would be relatively light for an effort as large as that proposed. Water use during construction would be approximately 45,000 gpd on average, primarily for dust control. Peak water use during construction would be approximately 90,000 gpd, with approximately half used for dust control and half used for soil preparation on concrete pours. Fifteen peak days are expected during construction. Assuming a 39 month construction period, with 15 peak days, total construction water use would be approximately 54 million gallons (166 acre-feet).

The on-site concrete-lined evaporation ponds would be constructed in a timely manner and used as storage reservoirs for construction water from SWWTP, which would be trucked in to the site prior to completion of the water pipeline.

Applicant-Proposed Modifications

The construction of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in construction related hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed and in the same general locations as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in construction-related hydrology and water quality impacts compared to the IVS project because this modification will not result in the construction of any structures or facilities on or off the IVS project site. This applicant-proposed modification will result in the use of an alternative water source during construction and initial operations as described earlier for the IVS project.

Operation Impacts

Soil Erosion Potential by Wind and Water

Wind erosion could occur on cleared and graded areas during operation of the IVS project. This could result in the loss of topsoil, nuisance deposition of wind-blown soil on other areas, and air quality effects in El Centro and agricultural areas to the east, which is in the direction of the prevailing wind flow.

Under project operations disturbed and cleared areas, primarily within the SunCatcher field, would be subject to increased erosion potential due to the removal of vegetation, the removal of desert pavement, the disturbance of the surface crust, and the placement of SunCatcher foundation poles in the flow path. The result of surface disturbances and the presence of SunCatchers in the flow path could be long-term erosional degradation of the soil surface within the SunCatcher array and in the intervening undisturbed areas, as well as increased sediment discharge off site across Dunaway Road and toward the east where the Westside Main Canal and New River flow.

The DESCP indicates that site soil stabilization would occur following construction and that several alternatives are being considered to determine which solution best achieves the desired effect to minimize wind erosion, prevent water erosion, and minimize weed and undesired vegetation growth, as well as providing a suitable work surface. Soil binders would be used in high traffic areas. Some areas may be covered or stabilized. The laydown areas would be returned to their pre-project condition as practical by removing all material placed there for the construction effort and restoring the soil to a native condition.

Measures SOIL&WATER-1 and SOIL&WATER-5 would ensure surface erosion protection and protection against wind erosion and increased runoff-borne sediment load from the watershed surface. With implementation of the BMPs in the DESCP, soil surface erosion due to wind and surface runoff during project operations would be minimized.

Localized summer monsoon storms can produce high-intensity rainfall spawning variable and unpredictable flash flooding on the project area. Flooding from these types of storms can be locally severe, with deep flows and high flow velocities. The aridity of the region results in sparse vegetative cover. The soils on the IVS project site are generally sandy and subject to erosion during flood events. Consequently, the potential for channel bank erosion and transport of sediment downstream is high.

Figures 4-6, 4-7, and 4-8 show typical channel patterns on the IVS project site. Figure 4-6 shows a view of the G North watercourse in the southwest corner of Section 15. Figure 4-7 is an

oblique aerial photograph of the same area. These images show a typical alluvial fan on Phase II with a braided but confined main channel upstream of the fan, a fan apex, and an alluvial fan with spreading, unconfined channels. At about the right center in Figure 4-7, the local hills diminish in size at the fan apex and the main channel splits into a series of smaller channels on the fan surface. Alluvial fans typically form where confined streams discharge onto relatively flat, unconfined plain areas. As sediment transported from upstream is deposited on the plain, local channels fill and flows can take new paths by avulsion. The alluvial fan surface is covered by radiating flow paths, any one of which, or all, can be taken by any flood. The flood pattern on alluvial fans for any given flood is unpredictable.

Figure 4-7 shows typical braided channel conditions in the C North watercourse of the Phase I part of the IVS project. Braided channels can be formed by streams with steep slopes, high sediment load and easily erodible banks. They are characterized by multiple, shifting channels and alluvial islands. The response of braided streams to floods is difficult to predict because they are unstable, rapidly change their alignment, carry large quantities of sediment, and are wide and shallow even at flood flow. As floods occur, local channels fill and shift across the braided surface in a local avulsion process contained by the adjacent hills. At the location shown in Figure 4-7, a series of approximately 17 interconnected braided channels, across a width of approximately 320 ft, conveys the Drainage C North flows. Most braids at this location are 10 ft or less in width.

Most of the medium to large size ephemeral streams on the IVS project site exhibit braiding or alluvial fan characteristics, or both. The site watercourses are typically unstable, with erodible banks, and are capable of rapidly shifting position where not constrained by high ground.

SunCatcher foundation poles in the flow path would create local areas of flow turbulence, resulting in local stream scour around the foundation poles. Scour such as this occurs on bridge piers, resulting in the need to bury bridge piers to a depth below the depth of scour to ensure stability. SunCatchers subject to scour could also become unstable if the scour is deep enough to undermine the structural foundation, resulting in collapse and potentially damaging and polluting the ground surface with mirror fragments and other SunCatcher debris.

The HEC-RAS model was used as a basis for floodplain modeling and is very effective at modeling floodplains characterized by an incised channel with well-defined overbank areas. HEC-RAS is not as effective at delineating flood hazards in wide braided channels and alluvial fan areas subject to erosion and channel avulsions as occur on most of the IVS project site. HEC-RAS models flow from cross section to cross section using a one-dimensional energy equation. In that model, flow is assigned to the lowest area of a stream cross section first, and the water level is increased equally in the model until the energy equation is balanced with the previous modeled cross section. The result is a single, flat water surface across each cross

section. In the case of braided or alluvial fan conditions, where flow direction can be two-dimensional with variable water surfaces across a cross section, HEC-RAS may give inaccurate results. To illustrate this, Figure 4-9 shows HEC-RAS Cross Section 9469.782 in the G North floodplain. This cross section is in the east part of the Phase II area, approximately 0.5 mi downstream of the transmission line. The floodplain mapped by HEC-RAS is 646 ft wide. A geomorphic evaluation based on field observations, topographic maps, and aerial photographs indicates the actual flood hazard area at this location is closer to 1,490 ft wide as indicated by the presence of visible wash beds. As floods occur on this cross section it is likely there would be variable water surface elevations across the cross section.

Numeric floodplain modeling on braided streams and alluvial fans can be accomplished by two-dimensional analysis for which a number of computer models exist. These models can be more accurate than HEC-RAS, but also have limitations. A simple and effective way to evaluate flood hazards is to use a qualitative geomorphic analysis based on observable factors such as topography, visible presence of past flow, vegetation patterns, soil characteristics, and visible presence of surface features not compatible with frequent flows (for instance desert pavement).

The floodplain mapping in Figure 3-17 attempts to account for HEC-RAS inaccuracies by including an interpreted 100-year floodplain to supplement the HEC-RAS output in areas where the HEC-RAS output is clearly inaccurate. These floodplain limits and HEC-RAS modeling are considered an approximate representation of the main flood-prone areas on the IVS project site, but that the mapping is not complete. Additional geomorphic or two-dimensional analysis is expected to be conducted during final design to more accurately map flood hazard areas. Actual flood-prone areas would be more extensive in areas where active or potentially active braided channels and alluvial fan characteristics extend beyond the HEC-RAS interpretive limits, and where smaller drainages were not mapped.

The HEC-RAS data is considered useful for determining probable hydraulic data, such as potential flow depths and flow velocities. Flow velocities and depths for the 100 year flood as estimated from the HEC-RAS modeling are fairly uniform across the site. Flow depths on the site average approximately 1.2 ft, with flow velocities approximately 3 ft per second (ft/sec). No flood depths in excess of 2 ft were modeled in the Phase I and Phase II areas. Maximum flow velocity for both those areas is 4.7 ft/sec.

The SunCatcher foundations would be buried to a sufficient depth to protect against 5 ft of scour. Using hydraulic information from the HEC-RAS analysis, and the assumption of a 2 ft diameter foundation, it is estimated that the total 100 year scour at SunCatchers would be 5 ft or less in most, but not all, cases. Scour depth is estimated to be deeper than 5 ft in several areas, and if long-term stream degradation and debris accumulation on SunCatcher foundations is considered, the scour depth could be greater than 5 ft in many cases.

The IVS project site contains a large number of small ephemeral streams not mapped on Figure 3-15. Most of those ephemeral streams originate on the IVS project site. Figure 4-10 shows a network of unmapped ephemeral streams in the area of the Main Services Complex. Figure 4-11 is a ground photograph of one of the ephemeral streams shown on Figure 4-10. The ephemeral streams on Figure 4-10 are approximately 80 to 300 ft wide in the area of the Main Services Complex, and converge to approximately 2,000 ft wide farther downstream. They exhibit the same braided pattern described above for the larger ephemeral streams in the area. Although these ephemeral streams are relatively wide, the contributing watersheds for them are small. The beginning of the channel shown in Figure 4-11 is only 3,700 ft upstream. Small ephemeral streams such as this exist throughout the IVS project site, but are more pronounced in the hillier Phase I area than Phase II area. In Phase I they run mostly north-south and are spaced roughly 300 ft apart through most of the area. The widths range from 3 ft to 400 ft or more including braids. Some ephemeral streams in the Phase II area exhibit alluvial fan characteristics as they discharge onto the flatter Phase II slopes.

The flood hazard area of the small ephemeral streams is approximately equivalent to the visible channel width. Although not modeled, based on the hydrology and HEC-RAS results for the modeled watercourses, it is expected that 100-year flood depths and velocities would be less than 1 ft/sec and 3 ft/sec, respectively.

Some SunCatchers could be placed in unmapped flood hazard areas without benefit of scour protection. Measure SOIL&WATER-7 is proposed to prevent soil surface damage and contamination resulting from SunCatcher instability in all areas. Measure SOIL&WATER-1 would also mitigate impacts associated with stream scour and SunCatcher instability.

Stream morphology in areas subject to direct impingement of flow could be altered by local diversions of flow by SunCatcher foundations. Local (pier) scour holes would form around the dish foundations during flooding. Each SunCatcher foundation in the flow path could have a scour hole roughly12 ft in diameter around it (including the foundation post), assuming an average pier scour depth of 3 ft and an angle of repose of 30 degrees for sand during a 100 year flood. The total land area subject to disturbance by scour around the 5,150 dish foundations in the floodplain could be 13 ac.

Scour holes would likely refill, at least partially, as the flood discharge subsides, but local scour during floods would be a continuing occurrence over the life of the IVS project. The turbulence created by local scour at dish foundations would result in the potential for increased local erosion and possibly new channel avulsions. The potential for adverse impact from induced local erosion and channel avulsions is expected to be more severe in the Phase II area because of the generally flatter terrain and higher flow discharges in that area. The Phase II area also has the presence of adjacent property not a part of the IVS project site, on which these impacts

could be manifested. The Phase I area would be subject to the same influences, but streams in this area are better confined to the IVS project site by local topography.

Basic stream morphology and sediment transport characteristics could be affected by the IVS project. Natural streams are typically in a state of dynamic equilibrium in terms of sediment transport. On average, the amount of sediment that a reach of a stream is capable of transporting is equal to the amount of sediment delivered to the reach from upstream. Should the amount of sediment delivered to a reach exceed the capacity of the stream to transport that sediment, the stream channel would tend to aggrade (accumulate sediment in the stream bed) as a result of the sediment delivery being in excess of the sediment transport capacity. A decrease in sediment delivery can result in stream degradation (lowering of the stream bed) as the sediment delivery is less than the sediment transport capacity and the stream takes sediment from the bed.

The stream channels are the most heavily vegetated areas on the property. Figure 4-12, from Drainage C in Figure 3-17, shows the relative density of vegetation within the stream channels as opposed to the watershed surface. The IVS project proposes clearing vegetation along the parallel rows of SunCatchers. The width of clearing would be approximately 130 ft, with approximately 72 ft left undisturbed between rows. Clearing of vegetation and smoothing of surface irregularities would result in a local decrease in channel or floodplain roughness, or resistance to flow, which could result in an increase in flow velocities along the cleared rows located in the floodplain. The capacity of a stream to transport sediment is heavily dependent on flow velocity. The result would be an increased potential for sediment transport in the cleared areas.

In areas where the SunCatcher rows run parallel to and within a natural stream alignment, as is generally the case in the Phase I area and the west part of the Phase II area, cleared areas running longitudinally along the stream alignment could be captured and used as efficient main conduits by flood flows. Localized erosion and scour could result, as well as increased sediment transport through these areas.

A sediment transport analysis to evaluate existing compared to with-project sediment transport conditions on the site was not available at the time the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was released. However, this sediment transport analysis has been released by the CEC for public review. The results and conclusions of this sediment transport analysis are included in the *Draft 404B-1 Alternatives Analysis* for the project (Appendix H). The RUSLE2 analysis described above addresses watershed sediment yield, not in-stream sediment transport. A preliminary independent estimate indicates sediment transport in areas cleared and graded for the IVS project could be 10 to 60 percent higher than natural conditions. Increased sediment transport in the SunCatcher arrays could result in stream degradation within

the arrays as well as sediment deposition in channels downstream of the IVS project site where sediment transport capacity is reduced, for instance at highway culverts and bridges which tend to slow upstream flow velocities.

IVS project-induced sediment deposition could be most severe in the areas of the alluvial fans in the Phase II area, and upstream of the railroad and road culvert crossings on Evan Hewes Highway at drainages designated with the letters I, J, A, K, C, and D as shown on Figure 3-17. Deposition upstream of the culverts, if severe enough, could compromise the capacity of these culvert and bridge crossings.

Drainages with the letter designations E, F, G, and H in the west part of the IVS project site run roughly perpendicular to the direction of the rows of solar dishes. After construction of the IVS project, these drainages would include strips of unaltered vegetation between the solar dish rows and perpendicular to the flow direction which should reduce the effect of the vegetation removal within the solar dish rows. The extent of this reduction is unknown at this time due to the absence of a detailed numeric analysis. Drainages F, G and H exit the solar dish array more than 1 mi upstream of the boundary of the IVS project site. This buffer distance, for which the sediment transport capacity should not be affected by the IVS project, could also reduce or mitigate the project effects of offsite sediment deposition.

The sediment basins are proposed to address potential excess sediment production which could result from increased sediment transport capacity in the SunCatcher arrays. These basins are designed by a regional equation rather than a site-specific sediment transport analysis. Because of the lack of precision in this form of analysis, the capacity of these basins to function as intended is not known. Because the basins are designed for 2 years of annual sediment production, they may serve the intended purpose on small floods, but could be overwhelmed by the much larger sediment transport volume of larger floods, with the resulting effect of increased sediment deposition downstream if sediment transport from the SunCatcher fields has been increased through vegetation clearing and grading of surface irregularities.

On an average annual basis, with smaller floods occurring, the basins may function as intended to remove sediment. However, this too could have an adverse impact after a long series of small floods if the basins remove too much sediment from the system.

Artificial removal of sediment from a streambed otherwise in equilibrium usually results in a lowering of the downstream bed. The result would be an alteration of downstream channel morphology from wide sandy washes with shallow banks to deeper channels with steeper banks. This could have an adverse effect on local riparian resources, increase the bank erosion potential, as well as affect in-stream man-made structures. Flow cascading into unprotected basins could create cuts that would migrate upstream along the channels.

Stream morphology on the site could be affected by increased production of sediment from the watershed surface; placement of obstructions in the flow path resulting in local scour and potential diversions; clearing of vegetation in channels and increasing sediment transport capacity; and installing sediment basins throughout the IVS project site to mitigate for increased sediment production. The result could be excess sediment deposition at culverts and bridges along Evan Hewes Highway and the railroad, and to the east in the direction of the Westside Main Canal. Other effects could occur as described above. Based on uncertainties regarding the ability of the IVS project measures to reduce sedimentation and stream morphology impact, sediment transport capacity in on-site drainages would likely be increased by the IVS project, with possible adverse effects. In the absence of a detailed, site-specific sediment transport analysis specifically addressing these issues, these stream morphology impacts are considered an adverse impact of the IVS project.

Storm Water

Operations surface water quality could be affected by the increase in sediment load as discussed above, and through the introduction of surface water pollutants such as operations-related trash; vehicle fuels, coolants, and other fluids; contaminated runoff from developed areas such as the substation and Main Services Complex; water treatment system wastes; sanitary wastes; SunCatcher mirror washing; and the accidental release of other materials, hazardous or non-hazardous, on the IVS project site.

SunCatcher mirror washing would be ongoing throughout the life of the IVS project. Most washing would be with demineralized water. Once a year, a dilute biodegradable soap solution would be used. The amounts of water used in the washes would not be sufficient to produce runoff, and the soap solution would be biodegradable. Measure SOIL&WATER-1 would ensure no adverse water quality or soils impact from mirror washing.

Runoff from the Main Services Complex, including any contaminants in that runoff, would be directed into a 1 ac storm water retention pond rather than being discharged into the natural channel system. The IVS project would include an oil/water interceptor to collect oil and other contaminants from the Main Services Complex. Oil collected from this interceptor would be transported to a certified recycling facility. Measures SOIL&WATER-1 and SOIL&WATER-5 would ensure minimization of operations-related storm water runoff contaminants in all areas except those associated with the sediment content of water related to stream morphological changes described above. Uncertainty regarding sediment content of runoff water results in a conclusion of potential substantial adverse water quality (sediment) impact.

Wastewater

The reverse osmosis (RO) water treatment system would produce water with a high concentration of total dissolved solids (TDS), as well as other contaminants. These wastewaters would be discharged into 1 of the 2 concrete-lined evaporation ponds at the Main Services Complex for drying. After a pond is filled it would be allowed to dry while the other pond is filled. The dry cake from the evaporation process would be removed by truck to a waste disposal facility. Potential impacts to soil and water resources include groundwater degradation from infiltration at the ponds, and surface water degradation from spills and mishandling of the dry cake.

This discharge of wastes to the evaporation ponds would be subject to waste discharge requirements from the RWQCB. CWC Section 3260–13269; 23 California Code of Regulations (CCR) Chapter 9 requires the filing of a Report of Waste Discharge (ROWD) and provides for the issuance of Waste Discharge Requirements with respect to the discharge of any waste that can affect the quality of the waters of the state. An ROWD would be filed for the RO unit discharge waste. Subject to verification by the RWQCB, the RO unit and evaporation ponds would be constructed and monitored in accordance with RWQCB requirements as outlined in detail in Appendices B, C, and D of Section C.7 – Hydrology, Water Use, and Water Quality (Soil and Water Resources). Measures SOIL&WATER-3 and SOIL&WATER-7 would ensure no adverse water quality impact from the RO water treatment system.

The storage, handling and clean-up of hazardous wastes on the IVS project site would be required to comply with a project-specific Hazardous Materials Management Program (HMMP). The HMMP addresses handling and usage, emergency response, spill control and prevention, training, record keeping, and reporting. A fuel handling design plan has been prepared for proper storage and handling of fuels. Measure WASTE-7 requires preparation of an Operation Waste Management Plan and Measure WASTE-8 requires documentation and clean-up of all spills of hazardous substances. Measures SOIL&WATER-3 and SOIL&WATER-5 would address water quality issues related to hazardous wastes.

Sanitary wastes would be discharged into a septic tank system with a dual sanitary leach field alternated every 2 years to allow recovery from bacterial loading. Sewer sludge would be pumped and disposed of by trucks at an approved off-site disposal facility. Adverse surface water quality impacts could occur through overflow of the septic and leach field system. Measure SOIL&WATER-8 would ensure the sanitary system is operated and maintained so potential impacts would be mitigated.

Groundwater Quality

The existing groundwater below the IVS project site is poor in quality and 50 ft or more bgs. Potential groundwater quality impacts could occur from surface contaminants such as oil, grease and other fluids in surface water infiltrating through channel beds to the groundwater, infiltration of sanitary wastes through the septic leach fields, infiltration of contaminated brines through the evaporation ponds for the water demineralization process, and through infiltration of surface contaminants at the retention basin in the Main Services Complex.

Surface contaminants in runoff would be minimized as described under surface water quality above and based on compliance with Measures SOIL&WATER-1, SOIL&WATER-5, and SOIL&WATER-7. Contaminants that do reach surface water would be filtered through at least 50 ft of soil before reaching groundwater. No adverse impact to groundwater quality is expected from surface contaminants in runoff.

The leach fields would be designed according to the California Plumbing Code and County of Imperial regulations and as such would be more than 10 ft above groundwater. The leach fields may also be subject to a RWQCB waste discharge permit. Measure SOIL&WATER-8 would ensure no substantial adverse impact to groundwater quality from the sanitary leach field system.

The demineralized water evaporation ponds would be lined with concrete to prevent infiltration. Solids from the ponds would be removed and transported by truck to a disposal facility. Measures SOIL&WATER-3 and SOIL&WATER-7 would ensure no adverse ground water quality impact from the water treatment system. No substantial adverse impact to groundwater quality is expected from the evaporation ponds.

The retention basin in the Main Services Complex would include an oil/water interceptor and be subject to RWQCB waste discharge requirements. Oil collected from the interceptor would be transported to a certified recycling facility. Measures SOIL&WATER-1 and SOIL&WATER-5 would ensure minimization of operations-related runoff contaminants. No substantial adverse impact to groundwater quality is expected from the retention basin.

Hydrology/Flooding

Flood discharges could be increased on the IVS project site as a result of impervious areas and the channelization of runoff conveyance channels. Channelization of flows within the solar field array would be minimal because grading would be conducted only locally to accommodate individual solar disks or to facilitate road construction. The basic hydrologic conveyance features of the site would remain unchanged. The amount of new impervious area within the

solar field array is estimated to be approximately 3 percent of the total surface, most of which is within the Main Services Complex. Within the SunCatcher array, impervious areas would consist of the SunCatcher foundations (approximately 2 ac for the 30,000 SunCatchers) and 137 ac of paved access roads. These areas would experience an increase in surface runoff locally, but considering the overall size of the entire IVS project site, the overall increase in runoff due to new impervious areas would be small. Assuming 100 percent runoff from impervious areas, the overall runoff coefficient of the SunCatcher array site would be increased by about 3 percent. At Dunaway Road, the point where runoff exits the IVS project site, the increase would be approximately 1 percent, meaning the 100 year discharge at Dunaway Road could be increased from 4,223 to 4,265 cfs. This increase is negligible and would be mitigated by the presence of the site road culverts and sediment basins which would have the effect of retarding and attenuating flood flows. Measure SOIL&WATER-1 would ensure no substantial increase in offsite flooding potential.

The Main Services Complex would be a source of additional runoff through the construction of impervious surfaces and efficient conveyance conduits. Increased runoff from the Main Services Complex would be mitigated through the construction of a 1 ac retention basin with capacity for 3 in of runoff from the Main Services Complex, with no assumed reduction for infiltration or evaporation. No substantial increase in runoff volume or discharge is expected from the Main Services Complex.

The site grading is intended to preserve the existing flow pattern. Localized channel grading would take place on a limited basis to improve channel hydraulics within the dry washes and to control flow direction where buildings and roadways are proposed. An evaluation of a typical dish array pattern within a site floodplain was conducted and determined that it is unlikely the narrow dish foundations, spaced at intervals of 112 ft or more, would substantially increase flood depths. Flood depth increases in most cases are expected to be less than 1 in. Flow depths could actually be lower than existing conditions if stream roughness is reduced through vegetation clearing. Roads would locally increase flooding at the locations of culverts, but the basic flow pattern would not be disturbed. The Main Services Complex would be in an area that is subject to minor drainage flows. The Main Services Complex design would include protection from flooding through fill, berms, and local diversion channels that will direct flow around the perimeter of the building site. Measures SOIL&WATER-1 and SOIL&WATER-7 would ensure hydrology and flooding impacts are kept to a level not substantial.

Project Water Supply

Operations water use, summarized in Table 4-73 would average 33,550 gallons per day (gpd), with total annual use of approximately 32.7 ac ft.

Table 4-73 Water Usage Rates for IVS Project Operations

Water Use	Daily Average, gal/minute	Daily Maximum, gal/min	Annual Usage, acre-feet
Equipment Water Requirements			
Sun Catcher mirror washing	10.4 (Table Note 1)	17.4 (Table Note 2)	14.2 (Table Note 3)
Hydrogen System	0.13 (Table Note 4)	0.13 (Table Note 4)	0.0133
Water Treatment System Discharge			
Brine from Demineralization Process	5.5	10.2 (Table Note 5)	7.5
Potable Water Use			
For drinking and sanitary water requirements	3.9 (Table Note 6)	4.7 (Table Note 7)	5.4 (Table Note 8)
Dust Control			
Raw water for dust control during operations	3.5 (Table Note 9)	6.9 (Table Note 10)	5.6 (Table Note 11)
Totals	**23.3**	**39.2**	**32.7**

Table Source: Staff Assessment/Draft Environmental Impact Statement (CEC/BLM 2010).

Table Note 1: Based on 30,000 SunCatchers requiring a monthly wash with an average of 14 gallons of demineralized water per spray wash and a 5-day work week (21 work days per month).

Table Note 2: During a 3 month period, all SunCatcher mirrors are given a scrub wash requiring up to 3 times the normal wash of 14 gallons per SunCatcher. Therefore, the Daily Maximum usage rate is based on two-thirds of the SunCatchers receiving a normal wash and one-third receiving a scrub wash.

Table Note 3: Based on every SunCatcher having approximately 8 normal washes per year with one additional scrub wash.

Table Note 4: Hydrogen system would require approximately 184 gallons of water per day or about 0.0133 acre-feet per year.

Table Note 5: Based on the maximum amount of demineralized water required for mirror washing and assumes a decrease in raw water quality requiring an additional 20% of system discharge.

Table Note 6: Assumes 30 gallons per person per day for 188 people.

Table Note 7: Maximum amount assumes a 20% contingency over the Daily Average.

Table Note 8: Assumes a 6-day work week and average daily usage.

Table Note 9: Assumes 5,000 gallons per day.

Table Note 10: Assumes up to 10,000 gallons per day.

Table Note 11: Assumes daily average dust control operations.

Table Key: gal/min = gallons per minute.

The SWWTP, at 1898 West Main Street in Seeley, approximately 13 mi east of the IVS project site, is anticipated to supply treated wastewater for mirror washing and other project uses except potable water. The IVS project applicant would construct an approximately 12 mi long pipeline from the IVS project site to the SWWTP to transport that water to the project. The applicant has also committed to finance an upgrade to the SWWTP to allow it to meet Title 22 regulations and to treat up to 250,000 gpd, with up to 200,000 gpd made available to the IVS project. An Environmental Impact Report (EIR) is being prepared by Imperial County for that plant upgrade, in compliance with the requirements of the California Environmental Quality Act (CEQA). The SWWTP currently discharges about 150,000 gpd of reclaimed water into the New River. After construction of the IVS project, an average of 33,550 gpd, and a maximum of 200,000 gpd would be routed to the IVS project.

SWWTP discharges to the New River are currently used only for habitat along the New River and in the Salton Sea. Discharge impacts to the New River for this purpose would be minimal. A discharge of 33,550 gpd is approximately 0.05 cfs. The maximum water allotment to IVS project of 200,000 gpd is approximately 0.31 cfs. United States Geological Service (USGS) records show New River average monthly discharges to be at least 198 cfs at the international boundary upstream of the SWWTP and 554 cfs at Westmorland downstream of the SWWTP. A reduction of 0.05 to 0.31 cfs to the New River discharge is 0.03 to 0.16 percent of the total and would not have a material effect on water quantity of the river. Measure SOIL&WATER-9 would ensure that impacts related to the diversion of flow would be mitigated to a level not substantial. Water quality impacts to the New River would be addressed by a revised waste discharge permit from the RWQCB for the SWWTP upgrades.

The Dan Boyer Water Company well is proposed to be part of all the Build Alternatives including the IVS project and the Agency Preferred Alternative. As a result, either the temporary water source or the SWWTP is expected to reliably provide water to the IVS project. Mirror washing operations would be temporarily suspended should the supply drop below the needs of the IVS project. Measure SOIL&WATER-9 would ensure viability of a water supply and that the amount of water used is consistent with the amounts considered in this analysis.

Potable water for the operations workforce, including water for hand washing and other uses requiring potable water, would be supplied from an offsite water supplier yet to be determined. SOIL&WATER-4 would ensure that this water comes from a water purveyor licensed to provide potable water in California and that the supply provided to IVS project site within the licensed capabilities of the purveyor.

The operation of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed

modifications would be designed, function, and in the same general locations and approximately the same overall site size as these facilities as evaluated for the original IVS project.

The applicant-proposed alternative water supply will not result in differences in operations related hydrology, water use, and water quality impacts compared to the IVS project because this modification would not be used in the long-term and would be replaced by water piped in from the SWWTP.

Decommissioning

The removal of the IVS project from service, or decommissioning, may range from mothballing to the removal of equipment and appurtenant facilities, depending on conditions at the time. A decommissioning plan would be submitted to the BLM for approval before decommissioning. The decommissioning plan would attempt to maximize the recycling of project components including selling unused chemicals back to the suppliers or other purchasers or users, draining and shutting down of equipment containing chemicals, and collection and proper disposal of hazardous and nonhazardous wastes.

Decommissioning activities would result in impacts similar to the construction impacts described above, but likely to a lesser extent. Long-term impacts after decommissioning could be substantial, particularly those related to erosion by water and wind, unless the site is restored to a condition similar to the existing condition, or a post-decommissioning maintenance plan is provided to prevent these impacts. Measure SOIL&WATER-10 would ensure that decommissioning impacts are minimized to a level not adverse.

The decommissioning of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system, would not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and decommissioned the same as these facilities as evaluated for the original IVS project.

4.17.4.2 709 MW Alternative: Agency Preferred Alternative

The Agency Preferred Alternative would result in soil and water impacts similar to those described in the previous section for the IVS project, except at a slightly reduced amount, because of the slight reduction in the area disturbed on site and in the number of SunCatchers. The measures identified for the IVS project would also apply to the Agency Preferred Alternative.

The construction and operation of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Agency Preferred Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and in the same general locations and on approximately the same overall site size as these facilities as evaluated for the original IVS project.

4.17.4.3 300 MW Alternative

Except as otherwise described in this section, all impacts of the 300 MW Alternative would the same as for the IVS project, but reduced in magnitude by about 60 percent due to the reduced area and number of SunCatchers in the 300 MW Alternative. The Measures applicable to the IVS project would also be applicable to the 300 MW Alternative.

Construction Impacts

The construction of the 300 MW Alternative would take less time than the IVS project, at approximately 16 months. Therefore, the potential construction impacts related to soils, water, and wastewater would be similar to under the IVS project, but reduced in magnitude by approximately 60 percent.

The construction of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the 300 MW Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed, and in the same general locations as these facilities as evaluated for the IVS project.

Operation Impacts

Soil erosion impacts by water and wind during operations of the 300 MW Alternative would be substantially reduced compared to the IVS project due to the smaller construction area. The 300 MW Alternative would include SunCatchers in flood hazard areas, as described for the IVS project (drainages I, J, K, A and C), with resultant increased sediment transport potential in these drainages, manifested in sediment deposition upstream of Evan Hewes Highway and south of Plaster City, potential erosion, and potential channel degradation as described for the IVS project. Although impacts to other drainages on the IVS project site would be avoided by

the 300 MW Alternative, in the absence of a detailed sediment transport analysis this impact is considered adverse for drainages I, J, K, A and C.

The surface water quality impacts under the 300 MW Alternative would be similar to, but substantially less than, those under the IVS project. The potential for introduction of surface water pollutants such as operations-related trash, vehicle fuels, coolants and other fluids from the solar dish array would be reduced by about 60 percent under the 300 MW Alternative compared to the IVS project. The potential impacts related to contaminated runoff from the substation and the Main Services Complex would be similar under the 300 MW Alternative and the IVS project.

The potential groundwater and flood related impacts of the 300 MW Alternative would be similar to, but substantially less than, under the IVS project.

The operation of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system under the 300 MW Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and in the same general locations as these facilities as evaluated for the IVS project.

The applicant-proposed alternative water supply will not result in differences in operations related hydrology, water use, and water quality impacts compared to the IVS project because this modification would not be used in the long term under the 300 MW Alternative and would be replaced by water piped in from the SWWTP.

4.17.4.4 Drainage Avoidance #1 Alternative

Except as otherwise described in this section, all impacts of the Drainage Avoidance #1 Alternative would the same as for the IVS project, but reduced in magnitude due to the reduced area and number of SunCatchers in the Drainage Avoidance #1 Alternative. The measures applicable to the IVS project would also be applicable to the Drainage Avoidance #1 Alternative.

Construction Impacts

The Drainage Avoidance #1 Alternative would result in the disturbance of approximately 2,640 ac on the site, of which 1,810 ac would be in the SunCatcher array. The impacts associated with construction disturbances on the site under the Drainage Avoidance #1 Alternative would be similar to, but slightly reduced compared to the IVS project.

The construction of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #1 Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed, and in the same general locations as these facilities as evaluated for the IVS project.

Operation Impacts

Under the Drainage Avoidance #1 Alternative, most of the SunCatcher foundation poles, which would be located in the active drainage flow paths under the IVS project, would not be placed into the flow paths under the Drainage Avoidance #1 Alternative. A small, undetermined number of SunCatchers would be placed in minor drainages originating on the IVS project site. There would be local areas of scour around those foundation poles as described for the IVS project, with the same potential for foundation instability and local erosion. Scour depths would likely be less than 5 ft in most cases for the Drainage Avoidance #1 Alternative due to lower discharges, flow velocities, and flow depths.

The Drainage Avoidance #1 Alternative avoids most stream morphology and sediment transport impacts that would occur under the IVS project. Specifically, adverse impacts associated with altered sediment transport characteristics caused by vegetation removal and grading in the major drainages would not occur under the Drainage Avoidance #1 Alternative. Sediment transport characteristics would be modified in the minor drainages, but these impacts are not considered adverse after implementation of the identified measures due to small drainage areas and discharges affected, and the fact that the small tributaries drain into the major washes which would not be affected.

The operation of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system under the Drainage Avoidance #1 Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and in the same general locations as these facilities as evaluated for the IVS project.

The applicant-proposed alternative water supply will not result in differences in operations-related hydrology, water use, and water quality impacts compared to the IVS project because this modification would not be used in the long term under the Drainage Avoidance #1 Alternative and would be replaced by water piped in from the SWWTP.

4.17.4.5 Drainage Avoidance #2 Alternative

Except as otherwise described in this section, all impacts of the Drainage Avoidance #2 Alternative would the same as for the IVS project, but reduced in magnitude due to the reduced area and number of SunCatchers in the Drainage Avoidance #2 Alternative. The Measures applicable to the IVS project would also be applicable to the Drainage Avoidance #2 Alternative.

Construction Impacts

The Drainage Avoidance #2 Alternative would result in the disturbance of approximately 940 ac on the site, of which 840 ac would be in the SunCatcher array. The impacts associated with construction disturbances on the site under the Drainage Avoidance #2 Alternative would be similar to, but substantially reduced compared to the IVS project.

The construction of the applicant-proposed modifications to the transmission line, water line, hydrogen storage system, and the alternative water supply under the Drainage Avoidance #2 Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, constructed, and in the same general locations as these facilities as evaluated for the IVS project.

Operation Impacts

Under the Drainage Avoidance #2 Alternative, SunCatchers would be placed in flood hazard areas, similar to the IVS project in drainages C and D and the upper alluvial fan part of E. The resulting impact is expected to be increased sediment transport potential in these drainages, manifested in sediment deposition upstream of Evan Hewes Highway and south of Plaster City, potential erosion, and potential channel degradation similar to under the IVS project.

The Drainage Avoidance #2 Alternative avoids most stream morphology and sediment transport impacts that would occur under the IVS project. Specifically, adverse impacts associated with altered sediment transport characteristics caused by vegetation removal and grading in the major drainages would not occur under the Drainage Avoidance #2 Alternative. Sediment transport characteristics would be modified in the minor drainages, but these impacts are not considered adverse after the implementation of the identified measures due to small drainage areas and discharges affected, and the fact that the small tributaries drain into the major washes which would not be affected. Although impacts to other on site drainages would be avoided by the Drainage Avoidance #2 Alternative, in the absence of additional sediment transport information, this impact is considered substantial and adverse for drainages C, D, and E.

The potential soil erosion impacts by water and wind under the Drainage Avoidance #2 Alternative would be similar to, but substantially less than, the IVS project due to the smaller construction area.

The operation of the applicant-proposed modifications to the transmission line, water line, and hydrogen storage system under the Drainage Avoidance #2 Alternative will not result in differences in hydrology, water use, and water quality impacts compared to the IVS project as described above. This is because these proposed modifications would be designed, function, and in the same general locations as these facilities as evaluated for the IVS project.

The applicant-proposed alternative water supply will not result in differences in operations-related hydrology, water use, and water quality impacts compared to the IVS project because this modification would not be used in the long term under the Drainage Avoidance #2 Alternative and would be replaced by water piped in from the SWWTP.

4.17.4.6 No Action Alternative: No ROW Grant and No CDCA Plan Amendment

Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant and would not amend the California Desert Conservation Area Plan (CDCA Plan, 1980 as amended). As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no impacts to soils and water associated with construction and operation of any of the Build Alternatives would occur. However, the site would become available to other uses that are consistent with the CDCA Plan. In addition, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have impacts to soils and water similar to the IVS project, in other locations.

4.17.4.7 No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar

Under this No Action Alternative, the BLM would not approve the ROW grand and would amend the CDCA Plan to make the site unavailable for future solar development. As a result, no solar energy project would be constructed on the IVS project site and BLM would continue to manage

the site consistent with the existing land use designation in the CDCA Plan. Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no soil erosion impacts or impacts to jurisdictional waters. As a result, this No Action Alternative would not result in impacts to soils and water. However, in the absence of the IVS project, other renewable energy projects may be constructed elsewhere to meet State and Federal mandates, and those projects could have impacts to soils and water similar to the IVS project, in other locations.

4.17.4.8 No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar

Under this No Action Alternative, the BLM would not approve the ROW grant but would amend the CDCA Plan to allow for other solar projects on the site. Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts to soils and water would result from the construction and operation of that solar technology and resulting ground disturbance and would likely be similar to the impacts to soils and water under the IVS project. Different solar technologies require different amounts of grading; however, it is expected that all solar technologies would require grading and maintenance. As such, this No Action Alternative could result in impacts to soils and water similar to the impacts under the IVS.

4.17.5 Cumulative Impacts

The geographic area considered for cumulative impacts related to soil and water resources is defined as described below:

- **Soil Erosion Potential by Water and Wind:** Soil erosion can be affected by any development or land alteration. The effects occur in terms of air quality as well as general deterioration of the land surface with potential regional effects. Cumulative impacts were evaluated over all southern California BLM land, including the CDCA.

- **Surface Water Quality:** Project-related surface water quality impacts potentially extend from the IVS project site to the Imperial County agricultural area and the Salton Sea. The geographic extent of cumulative impacts would encompass those areas south of the Salton Sea that could potentially have similar extent. Imperial County is considered the geographical extent of surface water quality impacts.

- **Ground Water Quality:** Ground water quality impacts could affect the Coyote Wells Valley and Imperial Valley Groundwater Basins. These basins comprise the geographic area for cumulative ground water quality impacts.

- **Hydrology/Flooding:** Hydrology and flooding impacts are generally managed on a county-wide or city-wide level. Imperial County is considered the geographic extent of hydrology and flooding impacts.

- **Water Supply:** With the exception of a minimal amount of water for potable uses, the project would entirely use reclaimed water that is currently discharged into the New River.

The cumulative study areas and projects in those areas are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis. Most of the cumulative projects, including the projects described in Section 2.10, have not yet been subject to environmental review under the requirements of CEQA and/or NEPA, as appropriate. As a result, the cumulative impacts analysis was based on the best information available. The cumulative projects may result in adverse impacts related to hydrology, water use, and water equality less than, similar to, or greater than the IVS project, depending on the locations and sizes of those other projects.

Soil and water resources in the geographic area have been impacted by past and currently approved projects including soil and vegetation disturbance resulting in an increased potential for water and wind erosion; placement of structures in flood hazard and erosion hazard areas resulting in flood or erosion hazards to the IVS project or adjacent features; creating flow diversions or increasing runoff potential resulting in increased flood and erosion potential; depleting groundwater or other water resources; degrading water quality through construction-related impacts; and degrading water quality through project operations. Existing and planned development projects in the California desert, described earlier in Section 2.10, Overview of the Cumulative Impacts Analysis, have substantially increased the potential for water and wind erosion during construction and operations. Groundwater use in some areas has been substantial, as has reliance on imported sources of water.

4.17.5.1 Construction Impacts

The construction of the IVS project is expected to result in short-term adverse impacts. It is expected that some of the cumulative projects in the area which are not yet built may be under construction at the same time as the IVS project. As a result, there may be substantial short-term cumulative soil and water impacts during the concurrent construction of those cumulative projects and the IVS project. The IVS project could contribute substantially to these possible

short-term cumulative impacts because of its size. The IVS project, 6,500 ac, amounts to roughly 25 percent of the total area of the cumulative projects. Although measures have been identified to reduce these impacts of IVS project, it is reasonable to assume that similar restrictions and mitigation will be placed on other future projects such that the relative contribution of IVS project to the total cumulative adverse impact would be substantial.

4.17.5.2 Operation Impacts

The operation of the IVS project is expected to result in long-term adverse impacts related to soil and water resources. It is expected that many of the cumulative projects would be operational at the same time as the IVS project. As a result, there may be substantial long-term impacts during operation of those cumulative projects related to soil and water resources. With the exception of impacts related to changes in stream morphology, the IVS project would be expected to contribute only a small amount to these possible long-term operational cumulative impacts related to soil and water resources because the IVS project impacts would be substantially mitigated. Specifically:

- Because the SWWTP improvements may not be ready at the time the construction of the IVS project begins, arrangements have been made with an already permitted third party water provider to supply water for construction and initial operations until the SWWTP water is available. The water provider is already permitted to use groundwater. Therefore, the IVS project would use groundwater, but would not cumulatively contribute to groundwater depletion because the provider is already permitted for the groundwater use and the water would be used on an interim basis between the time that construction starts and the SWWTP water is available.

- Non-sediment water quality impacts would be mitigated with the specified Measures such that the relative size of the IVS project would be less important than in the construction phase.

- Peak discharges and the potential for offsite flooding would not be increased by the IVS project. The IV project features would be protected from flood hazards.

- Water use by the IVS project would be minimal and derived primarily from treated wastewater that currently is discharged into the New River. It has been shown that this diversion of flow from the New River would have negligible impact on New River flows.

The IVS project would contribute substantially to erosion and sediment-related operational cumulative impacts because of its adverse impact related to altered sediment-transport characteristics of the area.

4.17.5.3 Decommissioning

The decommissioning of the IVS project is expected to result in adverse impacts related to soil and water resources similar to the IVS project construction impacts. It is unlikely that the construction, operation, or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of the IVS project, because that decommissioning is not expected to occur for approximately 40 years. As a result, the impacts of the decommissioning of the IVS project would not be expected to contribute to cumulative impacts related to Soil and Water Resources.

4.17.6 Mitigation, Project Design Features, and Other Measures

SOIL&WATER-1 **Drainage Erosion and Sedimentation Control Plan.** Prior to site mobilization, the project owner shall obtain both BLM's Authorized Officer (AO) and the Compliance Project Manager's (CPM) approval for a site specific DESCP that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding or sedimentation potential, and identify all monitoring and maintenance activities.

The project owner shall complete all necessary engineering plans, reports, and documents necessary for both the AO and CPM to conduct a review of the proposed project and provide a written evaluation as to whether the proposed grading, drainage improvements, sediment control measures, and flood management activities comply with all requirements presented herein. The plan shall contain the following elements:

Vicinity Map. A map shall be provided indicating the location of all project elements with depictions of all major geographic features to include watercourses, washes, irrigation and drainage canals, major utilities, and sensitive areas.

Site Delineation. The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale.

Drainage: The DESCP shall include the following elements:

(1) *Topography:* Topography for offsite areas is required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing storm water flow and flood hazard. Spot elevations shall be required where relatively flat conditions exist.

(2) *Proposed Grade:* Proposed grade contours shall be shown at a scale appropriate for delineation of onsite ephemeral washes, drainage ditches, and tie-ins to the existing topography.

(3) *Hydrology:* Existing and proposed hydrologic calculations for onsite areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.

(4) *Hydraulics:* Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, diversion facilities and BMPs.

Watercourses and Critical Areas. The DESCP shall show the location of all onsite and nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas.

Clearing and Grading. The plan shall provide a delineation of all areas to be cleared of vegetation, areas to be preserved, and areas where vegetation would be cut to allow clear movement of the SunCatchers. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross-sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall

include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps.

Soil Wind and Water Erosion Control. The plan shall address exposed soil treatments to be used during construction and operation of the proposed project for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the proposed project site that would not cause adverse effects to vegetation; BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use. All dust palliatives, soil binders, and weighting agents shall be approved by both the AO and CPM prior to use.

Project Schedule. The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element construction, and final grading/stabilization). Separate BMP implementation schedules shall be provided for each project element for each phase of construction.

Best Management Practices. The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction (during project operation). BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.

Erosion Control Drawings. The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion control specialist.

Agency Comments. The DESCP shall include copies of recommendations, conditions, and provisions from the County of Imperial,

California Department of Fish and Game (CDFG), and Colorado River Regional Water Quality Control Board (RWQCB).

Monitoring Plan. Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and storm water diversions.

Verification: No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to the County of Imperial, the RWQCB, the AO, and CPM for review and comment. Both the AO and CPM shall consider comments received from Imperial County and RWQCB.

During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-erosion- and sediment-control measures and the results of monitoring and maintenance activities. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities. The property owner shall provide the AO and CPM with two (2) copies each of all reports, including monitoring reports.

SOIL&WATER-2 **Monitoring and Verification of Water Use.** Prior to the use of recycled wastewater for operation of the IVS project, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the volume of water supplied to the IVS project. The metering devices shall be operational for the life of the project. An annual summary of daily water use by the IVS project, differentiating between potable and recycled wastewater, shall be submitted to the AO and CPM in the annual compliance report.

Verification: At least 60 days prior to use of any water source for IVS project operation, the project owner shall submit to the AO and CPM evidence that metering devices have been installed and are operational on all water pipelines serving the project. In the annual compliance report, the project owner shall provide a report on the servicing, testing, and calibration of the metering devices.

The project owner shall submit a water use summary report to the AO and CPM in the annual compliance report for the life of the project. The

annual summary report shall be based on the volume of water used and shall distinguish recorded daily use of potable and recycled water. Included in the annual summary of water use, the project owner shall submit copies of meter and/or delivery records from the potable water and recycled water supplies documenting the volume of water supplied over the previous year. The report shall include calculated monthly range, monthly average, and annual use by the project in both gallons per day and acre-feet. After the first year and for subsequent years, this information shall also include the yearly range and yearly average potable and recycled water used by the project.

SOIL&WATER-3 **Industrial Facility SWPPP.** The project owner shall comply with the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, including development of an Industrial Facility SWPPP. If the Regional or State Board finds the project does not require a General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, written confirmation from either board confirming this permit is not required would satisfy this condition.

Verification: The project owner shall submit a copy of the Industrial Facility SWPPP for operation of the project to the AO and CPM at least 60 days prior to the start of commercial operation and shall retain a copy of the approved SWPPP on site throughout the life of the project. The project owner shall submit copies of all correspondence between the project owner and the Colorado River RWQCB regarding the general NPDES permit for discharge of storm water associated with industrial activity to the AO and CPM within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the SWRCB, the confirmation letter indicating receipt and acceptance of the Notice of Intent, and any permit modifications or changes.

SOIL&WATER-4 **Potable Water Requirements.** Potable water shall be provided by a potable water purveyor licensed to provide potable water in the state of California. Potable water delivered by the purveyor to IVS project shall be within the licensed capacity of the water purveyor. The IVS project shall not operate without an executed agreement for potable water on file with the AO and CPM.

Verification: No later than 30 days prior to the initiation of construction the project owner shall submit two copies of the executed agreement with a licensed water purveyor for the potable water supply. The agreement shall specify that the potable water purveyor can deliver potable water sufficient for the needs of the IVS project construction and operation, specify the amount of water that shall be delivered on a monthly basis, document that the amount of water delivered is within the licensed capabilities of the water purveyor, and specify the contract time limit. The project owner shall ensure that this or an equivalent potable water agreement is in place and valid at all times the IVS project is in operation. New or revised agreements shall be delivered to the AO and CPM 30 days prior to the expiration of any agreement.

SOIL&WATER-5 **NPDES General Permit for Construction Activity.** The project owner shall comply with the requirements of the general National Pollutant Discharge Elimination System (NPDES) permit for discharge of storm water associated with construction activity. The project owner shall submit copies of all correspondence between the project owner and the State Water Resources Control Board (SWRCB) or the Colorado River RWQCB regarding this permit to the AO and CPM. The project owner shall also develop and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for construction on the IVS project main site, laydown areas, pipeline, and transmission line.

Verification: The project owner shall submit a copy of the construction SWPPP to the AO and CPM at least 10 days prior to site mobilization for review and approval, and retain a copy of the approved SWPPP on site throughout construction. The project owner shall submit copies of all correspondence between the project owner and the SWRCB or the Colorado River RWQCB regarding the NPDES permit for the discharge of storm water associated with construction activity to the AO and CPM within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent to the SWRCB, the confirmation letter indicating receipt and acceptance of the Notice of Intent, any permit modifications or changes, and completion/permit Notice of Termination.

SOIL&WATER-6 **Waste Discharge Requirements.** The project owner shall comply with the requirements of the Waste Discharge Requirements in Soil and Water Appendices B, C, and D for the proposed evaporation ponds. The project

owner shall develop, obtain AO and CPM approval of, and implement a monitoring and reporting program for the operation of the project.

Verification: At least 60 days prior to commercial operation, the project owner shall submit to the AO and CPM, for review and approval, a copy of the plan for the monitoring and reporting program in compliance with the requirements outlined in Soil and Water Appendices B, C, and D. The project owner shall retain a copy of the plan onsite. The project owner shall submit copies to the AO and CPM of all correspondence between the project owner and the Colorado River RWQCB regarding the Requirements of Waste Discharge of water associated with industrial activity within 10 days of its receipt or submittal.

SOIL&WATER-7 **Storm Water Damage Monitoring and Response Plan.** The project owner shall prepare a detailed drainage map for existing conditions showing the location of all watercourses on the site, recognizing that site areas with visible evidence of past flows are subject to future flows. The drainage map may be based on a geomorphic evaluation based on aerial photographs, topographic maps, site visits, and other relevant factors, and may be supplemented by a two-dimensional flow analysis at the discretion of the project owner.

The project owner shall ensure that all SunCatchers within flow areas as identified in the above-referenced drainage map are designed to withstand 100 year storm water scour as estimated by a SunCatcher Foundation Depth and Stability Report to be completed by the project owner. The report shall include estimates of hydraulic conditions at each location where SunCatchers are to be located in flood hazard areas and relevant scour calculations for each location. Scour calculations shall be developed by a registered civil engineer competent in scour calculation and include all relevant scour components including pier scour, general scour, antidune trough depth, bend scour, and long-term degradation. An assessment shall be made whether foundation widths should be increased for debris production.

The project owner shall also develop a Storm Water Damage Monitoring and Response Plan to evaluate potential impacts from storm water, including SunCatchers that fail due to storm water flow or otherwise break and scatter mirror debris on to the ground surface. The Storm Water

Damage Monitoring and Response Plan shall include the following elements:

- Detailed maps showing the installed location of all SunCatchers.
- Each SunCatcher shall be identified by a unique ID number marked to show initial ground surface at its base and the depth of the pylon below ground.
- Minimum Depth Stability Threshold to be maintained of pylons to meet long-term stability for applicable wind, water, and debris loading effects.
- Above and below ground construction details of a typical installed SunCatcher.
- BMPs to be employed to minimize the potential impact of broken mirrors to soil resources.
- Methods and response time of mirror cleanup and measures that may be used to mitigate further impact to soil resources from broken mirror fragments.
- Monitoring, documenting, and restoring the soil surface when impacted by sedimentation or broken mirror shards.

Monitor and inspect periodically, before first seasonal and after every storm event:

- SunCatchers within Drainages or subject to drainage overflow: Inspect for tilting, mirror damage, depth of scour compared to pylon depth below ground and the Minimum Depth Stability Threshold, collapse, and downstream transport.
- Drainage Channels: Inspect for substantial migration or changes in depth, and transport of broken glass.
- Constructed Diversion Channels: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.

- Ground Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or broken glass.

Short-term incident-based response:

- SunCatchers: Remove broken glass, damaged structure, and wiring from the ground, and for foundations no longer meeting the Minimum Depth Stability Threshold, either replace/reinforce or remove the mirrors to avoid exposure for broken glass.

- Drainage Channels: No short-term response necessary unless changes indicate risk to facility structures.

Long-term design-based response:

- Propose operation/BMP modifications to address ongoing issues. Include proposed changes to monitoring and response procedures, frequency, or standards.

- Replace/reinforce foundations no longer meeting the Minimum Depth Stability Threshold or remove the mirrors to avoid exposure for broken glass.

- Propose design modifications to address ongoing issues.

Inspection, short-term incident response, and long-term design-based response may include activities both inside and outside of the approved right of-way. For activities outside of the approved right-of-way, the project owner shall notify BLM and acquire environmental review and approval before field activities begin.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit the final drainage map, the Foundation Depth and Stability Report, and the Storm Water Damage Monitoring and Response Plan, with supporting analysis, to the AO and CPM for review and approval. The project owner shall retain a copy of these documents onsite at the power plant at all times. The project owner shall prepare an annual summary of the number of SunCatchers failed, cause of the failure, and cleanup and mitigation performed for each failed SunCatcher.

SOIL&WATER-8 **Septic System and Leach Field Requirements.** The project owner shall comply with the requirements of the County of Imperial Land Use Ordinance Title 9 and the California Plumbing Code (California Code of Regulations Title 24, Part 5) regarding sanitary waste disposal facilities such as septic systems and leach fields. The septic system and leach fields shall be designed, operated, and maintained in a manner that ensures no deleterious impact to groundwater or surface water. Compliance shall include an engineering report on the septic system and leach field design, operation, maintenance, and loading impact to groundwater.

Verification: The project owner shall submit all necessary information and the appropriate fee to the County of Imperial and the RWQCB to ensure that the project has complied with county and state sanitary waste disposal facilities requirements. Written assessments prepared by the County of Imperial and the RWQCB regarding the project's compliance with these requirements must be submitted to the AO and CPM for review and approval 30 days prior to the start of power plant operation.

SOIL&WATER-9 **Assured Water Supply.** The project owner shall provide the AO and CPM two copies of the executed Recycled Water Purchase Agreement (agreement) with the recycled waste water purveyor for the long-term supply (30 35 years) of disinfected tertiary recycled water to the IVS project. The project shall not operate without a long-term agreement for recycled water delivery and connection to a recycled water pipeline for project use. The agreement shall specify a delivery rate to meet the IVS project's maximum operation requirements and all terms and costs for the delivery and use of recycled water at the IVS project. The IVS project shall not connect to the new recycled water pipeline without the final agreement in place and submitted to the AO and CPM. The project owner shall comply with the requirements of Title 22 and Title 17 of the California Code of Regulations and section 13523 of the California Water Code.

The project owner shall work with the SWWTP to obtain approval from the RWQCB Division of Water Rights for the diversion of flows from the New River to the IVS project.

Verification: No later than 60 days prior to the connection to the recycled water pipeline, the project owner shall submit two copies of the executed

agreement for the supply and on-site use of disinfected tertiary recycled water at the IVS project. The agreement shall specify that the recycled wastewater purveyor can deliver recycled water at a maximum rate up to 250,000 gpd and would provide the IVS project a minimum of 33 acre-feet per year.

The project owner shall submit to the AO and CPM a copy of the Producer/User Water Recycling Requirements, the recycled wastewater criteria, the Engineering Report, the Cross Connection Inspection report, and RWQCB water rights approval under Section 1211 of the Water Code for the SWWTP diversion prior to the connection to the disinfected tertiary recycled wastewater pipeline.

SOIL&WATER-10 **Decommissioning Plan.** The project owner shall identify likely decommissioning scenarios and develop specific decommissioning plans for each scenario that will identify actions to be taken to avoid or mitigate long-term impacts related to water and wind erosion after decommissioning. Actions may include such measures as a decommissioning SWPPP, revegetation and restoration of disturbed areas, post-decommissioning maintenance, collection and disposal of project materials and chemicals, and access restrictions.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit decommissioning plans to the AO and CPM for review and approval prior to site mobilization. The project owner shall amend these documents as necessary, with approval from the AO and CPM, should the decommissioning scenario change in the future.

4.17.7 Summary of Impacts

Table 4-74 summarizes the direct, indirect, short-term, long-term, and cumulative adverse effects of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives related to hydrology, water use, and water quality. As shown in Table 4-74, with the information provided to date, it was determined that construction, operation, and decommissioning of the IVS project could potentially adversely impact soils, surface water, flooding, surface water quality, ground water quality, and water supply. Where these potential impacts have been identified, measures have been proposed to reduce those impacts such that they are not adverse.

Table 4-74 Summary of Water Resources Impacts by Alternative

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
IVS Project: 750 MW Alternative	The construction, operation, and decommissioning of the IVS project could potentially adversely impact soils, surface water, flooding, surface water quality, groundwater quality, and water supply. The IVS project will result in the short-term use of a local well in the Ocotillo/Coyote Wells Groundwater Basin which is part of the sole source aquifer. The IVS project would result in increased erosion potential on the site during construction and increased potential for pollutant runoff.	**Construction Measures** *SOIL&WATER-1:* Drainage Erosion and Sedimentation Control Plan *SOIL&WATER-3:* Industrial Facility SWPPP *SOIL&WATER-5*: NPDES General Permit for Construction Activity **Operations Measures** *SOIL&WATER-2:* Monitoring and verification of water use *SOIL&WATER-4:* Potable water requirements *SOIL&WATER-6:* Waste Discharge Requirements *SOIL&WATER-7:* Storm Water Damage Monitoring and Response Plan *SOIL&WATER-8:* Septic System and Leach Field Requirements *SOIL&WATER-9:* Assured water supply *SOIL&WATER-10:* Decommissioning Plan	None.
709 MW Alternative: Agency Preferred Alternative	Fewer impacts than the IVS project due to the construction of a smaller number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; NPDES = National Pollutant Discharge Elimination System NPDES; ROW = right-of-way; SWPPP = Storm Water Pollution Prevention Program.

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4.18 Irreversible and Irretrievable Commitment of Resources

The National Environmental Policy Act (NEPA) requires an analysis of the significant irreversible effects of a proposed action. Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, and other natural or cultural resources. These resources are considered nonretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another impact that falls under the category of irreversible and irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The Imperial Valley Solar (IVS) project would irretrievably commit resources over the 40-year life of the project. After 40 years, the IVS project is planned to be decommissioned and the land returned to its pre-project state. This would indicate that potentially some of the resources on site could be retrieved. However, 40 years is a long time and many variables could affect the project over that period. In addition, it is debatable as to how well the site can recover to its pre-project state. Open desert lands and sensitive desert habitats can take a long time to recover from disturbances such as development. The IVS project site is not currently entirely undisturbed due to the presence of off-highway vehicle use.

The IVS project is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 40-year life of the IVS project, this renewable energy project would contribute incrementally to the reduction in demand for fossil fuel use for electricity-generating purposes. Therefore, this incremental reduction in expending fossil fuels would be a positive effect of the commitment of nonrenewable resources to the IVS project.

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4.19 Growth-Inducing Impacts

The Imperial Valley Solar (IVS) project site is primarily (approximately 95 percent of the site) on Federal land managed by the United States Bureau of Land Management (BLM), 14 miles west of El Centro, California in unincorporated western Imperial County. The project site is in the eastern section of the Imperial County Ocotillo/Nomirage Planning Area.

In 2000, as reported by the United States Census, the population of the Ocotillo/Nomirage Planning Area was 719 persons. The population was 800 persons in 2006. Imperial County had a total population of 142,361 persons in 2000 and 161,867 persons in 2007.

The unemployment rate for Imperial County was 24.5 percent in February 2009 (not seasonally adjusted). Over the past few decades, full employment has been typically defined as approximately 4.0 to 5.5 percent unemployment. For California, the unemployment rate was 10.9% in February 2009 (not seasonally adjusted).

For this analysis, growth inducement is defined as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new residences, the extension of roads, and/or the expansion of other infrastructure. To determine whether the IVS project would induce population growth, the availability of the local workforce and the population in the region were analyzed. The local workforce is defined as workers in Imperial, San Diego, Riverside, and San Bernardino Counties. Construction workers beyond a two hour commute (either in- or out-of-state) would likely relocate for the workweek but would return to their primary residences and families on weekends.

The Imperial, San Diego, Riverside, and San Bernardino Counties labor market area was used for the evaluation of construction worker availability. Imperial County was evaluated for potential community services and infrastructure impacts from construction of the IVS project.

The applicant expects construction of the IVS project to occur in 2 phases and employ an average of 360 persons per month, totaling 24,086 personnel months for the 40-month construction period. The applicant proposes that project construction would start in late 2010. The greatest number of construction workers (peak) would occur in the seventh month of construction. The number of construction workers would range from about 101 in the first month of construction to approximately 731 workers at peak construction.

Table 4-75 shows that total construction labor by the types of skills needed for the IVS project, in Imperial, San Diego, Riverside, and San Bernardino Counties, with annual averages for 2009, is adequate when compared to the construction worker needs for the IVS project. The peak

construction employment of 731 workers for the IVS project represents less than 1 percent of the labor force in Imperial, San Diego, Riverside and San Bernardino Counties. The workforce needed for demolition of the IVS project would likely total the peak number of construction workforce.

Table 4-75 Total 2009 Labor Force in Imperial, San Diego, Riverside, and San Bernardino Counties by Construction Skill for Construction

Occupational Title	Annual Average Number of Employees in 2009	Maximum Employees Needed Per Month for IVS Project Construction
Carpenters	55,075	47
Concrete Crews	8,840	46
Electricians	13,980	113
Ironworkers	760	48
Laborers	38,255	142
Miscellaneous Crews	Not available	10
Operators	8,675	86
Plumbers	12,550	26
Technicians	Not available	32
SunCatchers Assemblers	Not available	64
SunCatchers Electricians	13,980	16
SunCatchers Ironworkers	760	32
SunCatchers Laborers	38,255	16
SunCatchers Material Handlers	Not available	16
SunCatchers Operators	8,675	8
SunCatchers Teamsters	32,265	12
SunCatchers Technicians	Not available	32
Teamsters	32,265	60
Technicians	Not available	5

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Because the majority of the construction workforce anticipated for the IVS project currently resides in Imperial, San Diego, San Bernardino, and Riverside Counties, construction and demolition of the IVS project would have little impact with respect to inducing substantial population growth.

When fully operational, the IVS project is forecast to employ approximately 164 full-time workers. The IVS project would operate 7 days a week, with maintenance activities occurring 7 days a week, 24 hours a day. It is expected that most of the operations employees would reside in Imperial, San Diego, San Bernardino, and Riverside Counties. Therefore, inducement of substantial population growth either directly or indirectly by the IVS project would not be substantial or adverse.

4.20 Short-Term vs. Long-Term Productivity of the Environment

The short-term uses of the environment as a result of the Agency Preferred Alternative, the Imperial Valley Solar (IVS) project, and the other Build Alternatives include those typically found with solar energy development. Short-term impacts associated with construction activities described elsewhere in Chapter 4.0, Environmental Consequences, include effects to the natural environment, cultural resources, and recreation resources. These can be compared to the long-term benefits of the Agency Preferred Alternative, the IVS project and the other Build Alternatives all of which would provide for the production of clean, renewable energy consistent with Federal and State goals to increase production of renewable energy to help reduce dependence on fossil fuels.

As discussed earlier in Section 4.18, Irreversible and Irretrievable Commitment of Resources, the Agency Preferred Alternative, the IVS project and the other Build Alternatives could permanently damage sensitive desert habitats, which in turn could adversely affect the long-term productivity of the area. However, these Alternatives would all also provide a long-term benefit by providing electric power without any increase in the use of non-renewable resources such as fossil fuels, which will result in a benefit to air quality and a reduction in carbon-based emissions.

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4.21 Summary of Unavoidable Adverse Impacts

The construction and implementation of the Imperial Valley Solar (IVS) project, the Agency Preferred Alternative, and the other Build Alternatives considered in this Final Environmental Impact Statement (FEIS) would result in short- and long-term adverse environmental impacts. This section summarizes the potential unavoidable adverse impacts that could occur as a result on the IVS project, the Agency Preferred Alternative, and the other Build Alternatives. This section also indicates whether the IVS project and the other Build Alternatives would not result in unavoidable adverse impacts for specific parameters. This summary is based on the technical analyses described throughout Chapter 4.0, Environmental Consequences.

4.21.1 Air Quality

As discussed in Section 4.2, Air Quality, the IVS project includes measures that would reduce the IVS project's stationary source nitrogen oxides (NO_X), volatile organic compounds (VOC), sulfur dioxide (SO_2), inhalable particulate matter (less than 10 microns in diameter, PM_{10}), and fine particulate matter (less than 2.5 microns in diameter, $PM_{2.5}$) emissions through the use of Best Available Control Technology (BACT), minimizing delivery and employee trips, and reducing mobile source emissions by using lower emitting gasoline and propane fueled new vehicles. With the inclusion of these measures, the IVS project would not result in adverse air quality impacts and would not contribute to cumulative adverse air quality impacts. The Agency Preferred Alternative and the other Build Alternatives are also not expected to result in adverse air quality impacts or to contribute to cumulative adverse air quality impacts.

In summary, the construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would not result in unavoidable adverse air quality impacts.

4.21.2 Biological Resources

As discussed in Section 4.3, Biological Resources, even with implementation of Measures BIO-1 through BIO-20, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will result in unavoidable adverse impacts to the flat tailed horned lizard (FTHL).

Implementation of Measures BIO-1 through BIO-20 is anticipated to reduce the severity of the impacts to other biological resources such that those impacts after mitigation are not considered adverse. As a result, the IVS project, Agency Preferred Alternative, and the other Build

Alternatives will not result in unavoidable adverse impacts to biological resources after mitigation other than the impacts to FTHL.

4.21.3 Climate Change

As discussed in Section 4.4, Climate Change, there would be no unavoidable adverse impacts related to greenhouse gas (GHG) emissions under the IVS project, the Agency Preferred Alternative, and the other Build Alternatives. The IVS project, the Agency Preferred Alternative, and the other Build Alternatives are not mandated to consider adaptation strategies including sea level rise because of the distance of the project site from the Pacific Ocean. In summary, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts related to climate change.

4.21.4 Cultural Resources

As discussed in Section 4.5, Cultural and Paleontological Resources, the likelihood of avoiding impacts to all the resources eligible for the National Register of Historic Places (National Register) for the IVS project, the Agency Preferred Alternative, and the other Build Alternatives is very remote. Although those impacts can be substantially mitigated, they cannot be 100 percent mitigated. In summary, the IVS project, the Agency Preferred Alternative and the other Build Alternatives will result in unavoidable adverse Impacts to cultural resources after mitigation.

Paleontological resources have been documented within the Quaternary alluvium, colluvium, lakebed sediments, and in sedimentary units of the Palm Springs Formation underlying the IVS project site. The potential adverse effects of the construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives on paleontological resources will be mitigated based on implementation of Measures PAL-1 through PAL-7. After mitigation, the IVS project, the Agency Preferred Alternative and the other Build Alternatives would not result in unavoidable adverse impacts to paleontological resources.

4.21.5 Fire and Fuels Management

Based on compliance with the applicable laws, ordinances, regulations, and standards (LORS) and Measures WORKER SAFETY-1 and WORKER SAFETY-2, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts related to fire and fuel risks.

4.21.6 Geology, Soils, Topography, Mineral Resources, and Seismic

The IVS project, the Agency Preferred Alternative, and the other Build Alternatives will comply with LORS applicable to geology, mineral resources, and the seismic environment. The design and construction of these Alternatives should have not be adversely affected by or adversely affect the geology, mineral resources, and seismic environment.

4.21.7 Grazing, and Wild Horses and Burros

As discussed in Section 4.8, Grazing, and Wild Horses and Burros, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts related to grazing, wild horses, and burros because the site is not currently used, designated as, or planned for grazing lands, and no wild horses or burros are known to inhabit the IVS project site.

4.21.8 Land Use and Corridor Analysis

As discussed in Section 4.9, Land Use and Corridor Analysis, the following unavoidable adverse land use impacts would occur if the IVS project was implemented; they would also occur, to a lesser extent, if the Agency Preferred Alternative or one of the other three Build Alternatives were to be implemented:

- The conversion of 6,500 acres (ac) of land to support the project components and activities would directly disrupt current recreational activities in established Federal, State, and local recreation areas and would result in adverse effects on recreational users of those lands.

- The IVS project would result in reduced off-highway vehicle (OHV) access routes on the project site and would result in adverse impacts to recreation opportunities on the IVS site as envisioned in the *California Desert Conservation Area Plan* (CDCA Plan, 1980, as amended) and the Western Colorado Desert Routes of Travel Designations (WECO) which are in an amendment to the CDCA Plan.

- Cumulative impacts to approximately 1 million acres of land in the southern California desert would combine to result in adverse effects on recreational resources and would result in an unavoidable adverse impact. In consideration of cumulative land use compatibility impacts, the implementation of renewable projects in southern California would occur mostly in undeveloped desert lands or areas of

rural development, and therefore, would not create physical divisions of established residential communities. Nonetheless, approximately 1 million acres of land are proposed for solar and wind energy development in the southern California desert. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore, would contribute to a cumulative adverse land use impact.

4.21.9 Noise and Vibration

As discussed in Section 4.10, Noise and Vibration, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would result in short- and long-term noise impacts which can be substantially mitigated based on implementation of Measures NOISE-1 through NOISE-7. After mitigation, the IVS project, the Agency Preferred Alternative, and the other Build Alternative would not result in direct, indirect, or cumulative unavoidable adverse noise impacts.

4.21.10 Public Health and Safety, and Hazardous Materials

As discussed in Section 4.11, Public Health and Safety, and Hazardous Materials, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in adverse impacts related to public health and safety.

After implementation of Measures HAZ-1 through HAZ-6, IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts related to hazardous material use, storage, and transportation, and other hazardous materials management activities.

4.21.11 Recreation

As discussed in Section 4.12, Recreation, the following unavoidable adverse impacts to recreation would occur under the IVS project and to a slightly lesser extent under the Agency Preferred Alternative and the other Build Alternatives:

- The conversion of 6,500 ac of land to support the project's components and activities would directly disrupt current recreational activities in established Federal, State, and local recreation areas and would result in adverse effects on recreational users of these lands.

- Because the IVS project and the other Build Alternatives would result in reduced off-highway vehicle (OHV) access routes on the project site, it would result in adverse land use and planning impacts to recreation opportunities on the site as envisioned in the CDCA Plan and the WECO amendment.

- Cumulative impacts to approximately 1 million acres of land in the southern California desert would result in adverse effects on recreational resources and would result in an unavoidable cumulative adverse impact. In consideration of cumulative land use compatibility impacts, the implementation of renewable projects in southern California would occur mostly in undeveloped desert lands or areas of rural development. Nonetheless, approximately 1 million acres of land are proposed for solar and wind energy development in southern California desert lands. The conversion of these lands would remove existing land uses including recreation, wilderness, rangeland, and open space and therefore would result in a cumulative adverse impact related to recreation resources.

- The impacts of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would contribute to a cumulative change in the visual and historic context of the Juan Bautista de Anza National Historic Trail (Anza Trail) corridor on and in the vicinity of the project site. Therefore, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would contribute to a secondary cumulative adverse impact to the overall recreational experience on the Anza Trail.

4.21.12 Socioeconomics and Environmental Justice

As discussed in Section 4.13, Socioeconomics and Environmental Justice, the construction, operation, and decommissioning of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would not result in direct, indirect, or cumulative adverse impacts on the study area's environmental justice populations, housing, schools, parks and recreation, law enforcement, and emergency services.

4.21.13 Special Designations

As discussed in Section 4.14, Special Designations, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in any unavoidable adverse impacts related to Wilderness Areas or Special Areas because none of those types of resources are located on or in the immediate vicinity of the IVS project site.

The IVS project, the Agency Preferred Alternative, and the other Build Alternatives will result in the conversion of designated agricultural lands to nonagricultural uses, but as described in Section 4.14, this is not considered an adverse impact under the National Environmental Policy Act (NEPA). Therefore, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts to designated agricultural lands.

4.21.14 Traffic and Transportation

As discussed in Section 4.15, Traffic and Transportation, based on implementation of Measures TRAN-1 through TRAN-4, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts related to traffic and transportation.

4.21.15 Visual Resources

As discussed in Section 4.16, Visual Resources, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would substantially degrade the existing visual character and quality of the project site and its surroundings. The approximately 6,500 ac project site, including over 6.5 miles (mi) of frontage on Interstate 8 (I-8), would experience a dramatic visual transformation from a predominantly natural desert landscape to one of a highly industrial character, strongly affecting motorists on I-8. The character and quality of views from some recreational destinations in the Yuha Desert ACEC, including segments of the Anza Trail, would be strongly affected. Given the moderately high to high level of viewer sensitivity of these affected viewpoints, the visual impacts are considered substantial and adverse under the IVS project, the Agency Preferred Alternative, and Drainage Avoidance #1 Alternative and, to a lesser degree, under the 300 MW and Drainage Avoidance #2 Alternatives.

The anticipated visual impacts of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives, in combination with past and foreseeable future projects in the West Mesa/Yuha Desert region and the southern California desert are considered cumulatively considerable and the contribution of the IVS project to that cumulative impact is substantial and adverse.

In summary, even with implementation of Measures VIS-1 through VIS-7, the visual impacts of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will be unavoidable and adverse.

Diffuse reflection from the SunCatchers could be an intrusive and distracting nuisance to motorists under at least certain conditions, particularly when an entire row of units could be visible in a near-vertical position to approaching motorists at hours near sunrise and sunset.

With implementation of Measure VIS-6, those potential adverse glare impacts would no longer be substantial, and therefore, would not be unavoidable and adverse.

4.21.16 Hydrology, Water Use, and Water Quality

As discussed in Section 4.17, Hydrology, Water Use, and Water Quality, with the information provided to date, it was determined that construction, operation, and decommissioning of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives could potentially adversely impact soils, surface water, flooding, surface water quality, groundwater quality, and water supply. With implementation of Measures SOIL&WATER-1 through SOIL&WATER-10, those impacts are reduced to a level where they are not adverse. Therefore, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in unavoidable adverse impacts related to hydrology, water use, and water quality.

4.21.17 Irreversible and Irretrievable Commitment of Resources

As discussed in Section 4.18, Irreversible and Irretrievable Commitment of Resources, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would irretrievably commit resources over the 40-year life span of the project. After the 40 years, the project is planned to be decommissioned and the land returned to its pre-project state. This would indicate that potentially some of the resources on site could be retrieved. However, 40 years is a long time and many variables could affect the project over that period. In addition, it is debatable as to how well the site can recover to its pre-project state. Desert lands and sensitive desert habitats can take a long time to recover from disturbances such as development. The IVS project site is not currently entirely undisturbed due to the presence of OHV use. In addition, the two private out-parcels surrounded by the project site represent development potential. In the most conservative interpretation of commitment of resources, and given the unknowns surrounding the long-term future, it is reasonable to assume that the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will irretrievably and irreversibly commit these undeveloped lands to a solar project. This would be an unavoidable effect of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives.

The IVS project, the Agency Preferred Alternatives, and the Build Alternatives would result in a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 40-year life of the facility, there should be a reduction or at least a no net increase in the demand for fossil fuels. Therefore, the reduction in demand for fossil fuels would be a positive effect of the commitment of nonrenewable resources to the IVS project, the Agency Preferred Alternative, and the other Build Alternatives.

4.21.18 Growth-Inducing Impacts

As discussed in Section 4.19, Growth-Inducing Impacts, because the majority of the construction and operation workforces for the IVS project, the Agency Preferred Alternative, and the other Build Alternatives currently reside in Imperial, San Diego, San Bernardino, and Riverside Counties, the construction, operation, and decommissioning of the project would have little impact with respect to inducing population growth. That effect would not be adverse.

4.21.19 Short-Term vs. Long-Term Productivity of the Environment

As discussed in Section 4.20, Short-Term vs. Long-Term Productivity of the Environment, the short-term uses of the environment associated with the IVS project, the Agency Preferred Alternative, and the other Build Alternatives include those typically associated with the construction and operation of solar energy projects. The short-term impacts associated with construction activities described throughout Chapter 4.0 include effects to the natural environment, cultural resources, and recreation resources. These can be compared to the long-term benefits of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives associated with clean, renewable energy production for a growing regional population and economy.

As discussed in Section 4.18, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives could permanently damage sensitive desert habitats which in turn could affect the long-term productivity of the area. However, they would also provide a long-term benefit by providing power without any increase in the use of nonrenewable resources such as fossil fuels, a benefit to air quality, and a reduction in carbon-based emissions.

Chapter 5
Consultation, Coordination, and Public Participation

5.1 Scoping Process

Scoping activities were conducted by the United States Bureau of Land Management (BLM) in compliance with the requirements of the National Environmental Policy Act (NEPA) for the Imperial Valley Solar (IVS) project. Many of these scoping activities were conducted jointly with the California Energy Commission (CEC). The BLM conducted its scoping consistent with the requirements of NEPA and with the BLM National Environmental Policy Act Handbook H-1790-1 (BLM, January 1, 2008).

The BLM's scoping activities are described in detail in the *Final Scoping Report Stirling Energy Systems Solar Two Project* (LSA Associates, Inc. September 2009). The Scoping Report is provided on a compact disc in Appendix C, Scoping Report. Key scoping activities are described in the following sections.

The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) in February 2010. As a result, public comments and information from prior to the SA/DEIS included in this section refer to the Solar Two project. All citations to the Solar Two project in this section should be interpreted to mean the IVS project.

5.1.1 Notice of Intent and Scoping Meetings

Public notice regarding the proposed joint California Environmental Quality Act (CEQA)/NEPA environmental document and the scoping and public information meetings was provided as follows:

- The "Notice of Intent (NOI) to prepare an Environmental Impact Statement/Staff Assessment and Proposed Land Use Plan Amendment for the Proposed SES Solar Two Project, Imperial County, CA" was published by the BLM in the Federal Register on October 17, 2008. The publication of the NOI initiated the 45-day public scoping period for the project.

- The CEC issued a "Notice of Informational Hearing and Public Site Visit and Bureau of Land Management Scoping Meeting" on October 10, 2008, inviting agencies and the public to attend a scoping meeting on November 24, 2008.
- The CEC issued a "Notice of BLM and Energy Commission Staff Data Response and Issues Resolution/Scoping Meeting for the SES Solar Two Project" on December 2, 2008, for a workshop/scoping meeting scheduled for December 18, 2008.
- Notices of the November 24, 2008 scoping meeting were published in the Imperial Valley Press on November 15, 2008, and the Adelante Valle on November 28, 2008.
- The public information/scoping meetings were conducted jointly by the BLM and CEC on November 24, 2008, and December 18, 2008.

5.1.2 Summary of Comments Received During Scoping

Verbal comments were received from 20 attendees and written comment cards were received from many of the attendees at the November 24, 2008, scoping meeting. Verbal comments were received from 20 attendees and written comment cards were received from many of the attendees at the December 18, 2008, scoping meeting. In addition, the CEC received 13 written comment letters in response to the NOI. The transcripts from the scoping meetings and the written letters received by the CEC are provided in the appendices in the Scoping Report.

The verbal and written comments received during the scoping period covered a number of topics and are summarized in Tables 5-1 through 5-3, which are provided following the last page of text in this section. These tables only include comments that raised issues under NEPA and/or CEQA. This table was used to document and identify issues discussed during the scoping process. In addition to the comments on technical and project-related issues summarized in Tables 5-1 through 5-3, many of the comments also indicated either support for or opposition to the Imperial Valley Solar project. There were also comments indicating support for renewable energy projects in general.

5.2 Summary of Comments Received on the Staff Assessment/Draft Environmental Impact Statement

The Staff Assessment/Draft Environmental Impact Statement/Staff Assessment (SA/DEIS) was circulated for public review between February 22, 2010 and May 27, 2010. Public notice regarding the availability of the SA/DEIS for the "Stirling Energy Systems Imperial Valley Solar

Project (formerly the Solar Two Project) and Proposed California Desert Conservation Area Plan Amendment" was published in the Federal Register on February 22, 2010. The Notice stated that written comments would need to be received within 90 days of the publication of the notice of the availability (NOA) of the SA/DEIS. The United States Environmental Protection Agency (EPA) also published a Notice of Availability of the SA/DEIS on February 26, 2010. That Notice incorrectly indicated that the comment period for the SA/DEIS would end on April 12, 2010. An amended Notice was published by the EPA on March 12, 2010 indicating that the comment period for the DEIS/SA would end on May 27, 2010.

Appendix D, Comments on the Draft EIS and Responses, includes all the written comment letters and emails received by the BLM in response to NOA. Table 5-4 lists the agencies, organizations, and members of the general public who submitted written comments. Table 5-4 also generally summarizes the comments provided by the commenting agencies/parties and where those topic areas are addressed in the FEIS. Appendix D provides responses to the comments received on the DEIS. Table 5-4 also includes comments expressing views opposed to the IVS project, renewable energy projects on desert lands, and other similar views, as well as comments supporting the IVS project and/or other renewable energy projects.

5.3 Organizations and Persons Consulted

In addition to the scoping and SA/DEIS public review processes, the BLM has been consulting and coordinating with public agencies who may be requested to take action on the IVS project. That ongoing consultation and coordination is discussed in the following sections.

5.3.1 United States Fish and Wildlife Service

The BLM permit, consultation, and coordination with the United States Fish and Wildlife Service (USFWS) required for the IVS project complies with the Federal Endangered Species Act (ESA) regarding potential take of the Peninsular bighorn sheep and the flat-tailed horned lizard (FTHL). "Take" of a species listed under the Federal ESA is prohibited except as authorized through consultation with USFWS and issuance of an Incidental Take Statement under Section 7 or 10 of the ESA, depending on whether there is Federal agency action required for the proposed project (i.e., a Federal permit required or funding involved). Because Federal agency action has been identified for the IVS project, Section 7 consultation/conferencing between the BLM and USFWS is required prior to any take authorization for the IVS project under the ESA from the USFWS. The Carlsbad Field Office of the USFWS oversees ESA permitting actions in the project area.

The BLM has submitted a Biological Assessment for take of Peninsular bighorn sheep and FTHL to the USFWS for the IVS project. It is expected that the USFWS Biological Opinion will conclude that the project "…may affect, not likely to adversely affect" Peninsular bighorn sheep.

Although the FTHL is not Federally listed under the ESA at this time, it is anticipated that this species may be listed during the construction or operation of the IVS project. To avoid or reduce possible time constraints, the FTHL was included in the Biological Assessment for the IVS project, should this species become Federally listed. Because the FTHL has not been listed as of July 2010, the BLM is undergoing conferencing, rather than consultation, with the USFWS for this species. Because the BLM and USFWS are signatories in the FTHL Interagency Coordinating Committee (ICC), it is anticipated that the recommendations stated in the FTHL Rangewide Management Strategy (FTHL ICC 2003) will be in the USFWS conferencing opinion.

Table 3-6 in Section 3.3, Biological Resources, shows that there is suitable foraging habitat for the golden eagle on the project site. Due to the potential loss of foraging habitat for golden eagles, it is possible that a permit for take under the Eagle Act may be needed. The USFWS is currently drafting guidelines by a proposed project regarding whether and to what degree the removal of foraging habitat for golden eagles would meet the definition of "disturb" under the ESA and, therefore, require issuance of a take permit.

The process of consultation with USFWS for the IVS project is ongoing.

5.3.2 United States Army Corps of Engineers

Project-related fill of waters of the U.S. would require authorization by the United States Army Corps of Engineers (Corps) pursuant to Section 404 of the Federal Clean Water Act (CWA) under a Standard Individual Permit subject to CWA Section 404(b)(1) Guidelines. The Corps will require mitigation for project-related fill of waters of the U.S.

The CWA requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the Corps for a discharge from dredged or fill materials into waters of the U.S., including wetlands. The Corps prepared *Draft 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* (refer to Appendix H) to assist the Corps in determining the Least Environmentally Damaging Practicable Alternative (LEDPA) and mitigation required for permitting the IVS project.

The Corps is a cooperating agency with the BLM on the FEIS. The process of consultation with the Corps for the IVS project is ongoing.

5.3.3 National Park Service

The Juan Bautista de Anza National Historic Trail (Anza Trail) is a cultural resource of national significance for its association with important events in our history and its associations with important persons in our early history, as well as for its information potential. The United States Department of the Interior National Park Service (NPS) is the administrator of the Anza Trail.

The proposed Programmatic Agreement (PA) described in detail in Sections 3.5 and 4.5, Cultural Resources, is expected to provide for a number of measures to verify the presence of any material remains of the Anza Trail on the IVS project site, and to address potential degradation to any such remains found and to the visual integrity of the resource. Because the IVS project may affect presently unfound or unrecognized material remnants of Anza Trail, the PA may propose measures such as a further close-quarter pedestrian survey to ensure there are no material remains of the trail on the IVS project site. The PA could also provide for the analysis of the project area isolate data to see whether any potential Spanish Colonial era materials have been found. The consulting parties to the PA are anticipated to develop any off-site measures in consultation with one another and to refer to the "Juan Bautista de Anza National Historic Trail Comprehensive Management and Use Plan" for guidance.

The NPS is a cooperating agency with the BLM on the FEIS. The process of consultation with the NPS for the IVS project is ongoing.

5.3.4 Native American Consultation/Coordination and Section 106 Consultation/Coordination

A key part of a cultural resources analysis under CEQA, NEPA, and Section 106 of the National Historic Preservation Act of 1966 (NHPA) is to determine which of the cultural resources that a proposed or alternative action may affect are important or historically significant.

In accordance with 36 Code of Federal Register (CFR) Part 800.14(b), PAs are used for the resolution of adverse effects for complex project situations and when effects on historic properties (resources eligible for or listed in the National Register of Historic Places (National Register) cannot be fully determined prior to approval of an undertaking. The BLM is preparing a PA in consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), the CEC, interested tribes (including tribal governments as part of government-to-government consultation), and other interested parties. The PA will govern the continued identification and evaluation of historic properties (eligible for the National Register) and historical resources (eligible for the California Register of Historic Places), as well as the

resolution of any effects that may result from the IVS project. Historic properties and historical resources are significant prehistoric and historic cultural resources as determined by the BLM.

As a result of the anticipated impacts of the IVS project on cultural resources and the large geographic area in the Area of Potential Effects (APE), a PA with the BLM, CEC, the SHPO, and interested Native American tribes (government-to-government consultation) is necessary. Treatment plans regarding historic properties and historical resources that cannot be avoided by the construction and/or operation of the IVS project will be developed in consultation with the CEC, the SHPO, and interested Native American tribes (government to government consultation) as stipulated in the PA. When the PA is fully executed, the project will have fulfilled the requirements of the NHPA.

The BLM initiated formal consultation with the ACHP and the SHPO on the development of a PA for the IVS project on August 25, 2009. The ACHP replied on September 22, 2009 that they would participate in consultation on the project. Due to the presence in the APE of the Anza Trail and jurisdictional waters as defined by Section 404 of the CWA, the NPS and the Corps were also invited into consultation on the development of the PA in that they may use it to comply with Section 106 of the NHPA. These agencies have agreed to participate. Other formal Consulting Parties to the PA at this time include the National Trust for Historic Preservation, Tessera Solar, LLC, the CEC, California Unions for Reliable Energy (CURE), Sacred Sites International Foundation, Greg Smestad, and Edie Harmon. The following Tribes or tribal organizations have also been invited to be Consulting Parties to the PA:

- Campo Kumeyaay Nation
- Cocopah Indian Tribe
- Quechan Indian Tribe
- Ewiiaapaayp Band of Kumeyaay Indians
- Jamul Indian Village
- Kwaaymii Laguna Band of Indians
- La Posta Band of Kumeyaay Indians
- Manzanita Band of Kumeyaay Indians
- San Pasqual Band of Diegueño Indians

- Santa Ysabel Band of Diegueño Indians
- Ah-Mut Pipa Foundation

A draft PA is currently in development and is included in Appendix G, Draft Programmatic Agreement. The Record of Decision will include the signed PA.

The consultation with the ACHP, SHPO and Native American Tribal Governments for the IVS project is ongoing.

5.3.5 California Department of Fish and Game

Consultation with the California Department of Fish and Game (CDFG) is anticipated for the impacts to FTHL habitat and possible impacts to waters of the State. It is expected, that, at a minimum, best management practices (BMPs) will be used to maximize avoidance of impacts to jurisdictional state waters by the reclaimed water pipeline. The applicant is responsible for obtaining State permits including a Section 1602 Lake and Streambed Alteration Agreement if required for the IVS project for the impacts to jurisdictional state waters. Consultation with CDFG for the requirement to acquire off-site FTHL habitat is continuing.

The process of consultation with CDFG for the IVS project is ongoing.

Table 5-1 Written Comments Received During Scoping

Comments from United States Environmental Protection Agency (EPA)
Purpose and Need: Provide a clear and objective statement of the project's purpose and need.
Alternatives: Provide a robust range of alternatives; explain why some alternatives were eliminated; look at alternative sites, capacities, technologies.
Biological Resources: Address threatened and endangered species in detail, including baseline conditions; how avoidance, minimization, and mitigation measures will protect species; and long-term management and monitoring efforts.
Air Quality: Detailed discussion of ambient air quality; quantify project emissions; identify emissions sources (mobile, stationary, ground disturbance); identify the need for an Equipment Emissions Mitigation Plan (EEMP) and Fugitive Dust Control Plan during construction.
Climate Change: Address climate change and how climate change could potentially affect the project; identify any climate change benefits of the project.
Cumulative Impacts: Clearly identify resources that may be cumulatively impacted and the geographic area that will be impacted by the project; look at past impacts on resources; identify opportunities to avoid and minimize cumulative impacts.
Water Resources: Evaluate project need for water and effects on water supply.
Groundwater: Direct and indirect effects on groundwater.
Water Resources: Impacts on springs, open water bodies, and other aquatic resources.
Water Use: Clarify the water rights permitting process.
Water Quality: Potential need for a Section 404 permit.
Water Quality: Discuss any Section 303(d) impaired waters in the project area.
Consultation with Tribal Governments: Describe process for and outcome of government-to-government consultation; discuss any National Register of Historic Places properties and any Indian Sacred Sites; and development of a Cultural Resources Management Plan.
Environmental Justice: Identify environmental justice populations in the project area and potential impacts of the project on those populations; identify whether the impacts are disproportionate on those populations; discuss any coordination with environmental justice populations.
Recreation: Address effects of the project on recreational users in the project area, including potential hazards to those users associated with the project facilities; identify appropriate safety precautions.
Invasive Species: Address potential for project to introduce invasive species; how they will be controlled; development of an invasive species management plan; and restoration, as appropriate, of native species.
Hazardous Materials and Wastes: Address the potential for direct, indirect, and cumulative impacts of hazardous wastes generated during project construction and operation; identify types and volumes of wastes; identify handling, storage, disposal, and management plans; alternative industrial processes using less toxic materials should be considered.
Land Use: Identify consistency and/or conflicts with Federal, State, Tribal, and local land use plans, policies, and controls in the project study area.
Comments from Teri Weiner, Imperial County Projects and Conservation Coordinator, Desert Protective Council
Cultural Resources: Complete surveys of cultural artifacts, sites, and areas in the project area are needed; local archaeologists should be considered; consultation with Native American tribes is needed; need to address cumulative impacts.
Land Use: Need to address project and cumulative loss of public lands to other uses (particularly energy projects).

Biological Resources: Need to address impacts to sensitive plants and animals; conduct species surveys at appropriate times of the year.
Invasive Species: Control of invasive species during construction and operation.
Animals and Plants: Potential impacts of scraping for roads on sensitive and rare plants and animals.
Air Quality: Air quality (PM10 [particulate matter less than 10 microns in size]); prevention of air quality impacts during project construction and operation.
Water Supplies/Use: Impacts on Ocotillo/Nomirage aquifer; overall effect on demand for water.
Land Use, Visual, and Noise: Impacts to community character in the Ocotillo and Nomirage communities; dark skies impacts; noise impacts.
Aviation Impacts: Air space impacts; glare to pilots.
Recreation: Address impacts to recreational experience at the Plaster City Open Area, Superstition Hills Recreation Area, Painted Gorge Recreation Area, and Anza-Borrego Desert State Park.
Comments from Alex Daue, Renewable Energy Coordinator, The Wilderness Society, and Johanna Wald, Senior Attorney, Natural Resources Defense Council
Project Description: The Solar Two site appears to have potential for developing solar energy with fewer impacts to resources than other areas managed by BLM; should prioritize on already disturbed lands and in proximity to existing transmission lines.
Minimize and mitigate unavoidable impacts to resources and values.
Cultural Resources: Prioritize protection of area's cultural resources; develop strategies to minimize and mitigate unavoidable effects on cultural resources; conduct ongoing consultation with local Native American tribes.
Biological Resources: Prioritize protection of species in the project area; analyze project impacts on species; develop BMPs and other steps to minimize and mitigate unavoidable impacts on resources.
Water Supply/Use: Confirm that the water needed for the project is available and consistent with existing California Energy Commission (CEC) policy.
Project Description: Concerns regarding viability of technology.
Project Phasing: Consider granting right-of-way for Phase I only, with Phase II dependent on approval finalization of the Sunrise Power Link project and resolution of additional issues regarding the Solar Two project.
Project Phasing: Consider establishing requirements for a demonstration of technological and economic viability with 3 to 5 years of approval of right-of-way before extending the length of the right-of-way approval.
Project Description: Conduct an analysis of the energy return on investment to assess the net energy production value of the project.
Hazards: Analyze the potential effects of hydrogen leakage and identify strategies to minimize and mitigate impacts.
Project Description/Funding: Want cash bonds to cover future decommissioning costs with bonds phased consistent with the project phasing.
Comments from Edie Harmon, Sierra Club, San Diego Chapter
Alternatives: Analyze a range of alternatives to avoid the impacts of the project on cultural resources and to overall reduce the reliance on fossil fuels.
Alternatives: Suggest No Project Alternative include other energy-generating options.
Alternatives: Suggest installing units in San Diego County closer to the users of the electricity.
Alternatives: Suggest installing units in Imperial County at dispersed locations.
Alternative Sites: Suggest looking at alternative sites such as Mesquite Lake that are already disturbed or looking at multiple smaller sites.
Alternatives: Use the Stirling SunCatcher dish at existing natural gas or coal-fired power plants.

Project Description: Why is the electricity generated by Solar Two not going to be available to IID for use in Imperial County?
Project Description and Air Quality: How will high winds and fine-grained dust affect the moveable parts of the SunCatcher assembly? How will the assembly be protected from the effects of high winds and dust?
Project Description: What will be the effect of high winds and fine-grained dust on the mean time between failure (MTBF) and the need to clean the mirrors?
Project Description: What effect will gypsum dust from the US Gypsum Plaster City factory have on the facilities?
Project Description: What was the MTBF at the New Mexico site? What is the estimated MTBF at the proposed site?
Socioeconomics: What kind of jobs at what skill levels will be created? Will those jobs be met by existing employees in Imperial County or will they require employees relocating from other areas?
Project Description: Concern regarding going from small prototype to large-scale commercial facility without an intermediate level of facility or experience.
Phasing: How will the project be phased?
Project Description: What factors will contribute to MTBF and ongoing facility maintenance?
Project Description: How will materials for the project be brought to the site?
Project Description: How much hydrogen will be stored on site? Where will it be located on site?
Project Description/Funding: Want cash bonds to cover future decommissioning costs; will components have any resale or recycling value; how much material might end up in landfills; who will be responsible for the bond costs?
Project Description: How will higher summer temperatures in Imperial County affect the system?
Project Description: How much water will need to be used for mirror cleaning? How much will run off into the ground versus evaporation?
Invasive Species: Introduction of nonnative invasive species; precautions or mitigation measures needed to prevent invasive species.
Project Description: How will total dissolved solids (TDS) in the wastewater impoundment areas be handled to avoid runoff outside the impoundment areas or becoming airborne as dust; how will TDS be disposed of; how will the impoundment areas be managed and maintained; how will the waste impoundment areas be addressed when the facility is decommissioned, including restoration of the land occupied by the wastewater impoundment areas; what strategies will be in place to minimize attracting birds to the wastewater impoundment areas?
Cultural Resources: Address issues related to site potentially being designated as an Area of Traditional Cultural Concern (ATCC).
Cultural Resources: Seek input from Native American groups and the State Historic Preservation Officer.
Visual Resources: Effect on visual resources in the area, including potential cumulative effect of this and other projects in the area.
Traffic and Land Use: Traffic study should include traffic associated with Centinela State Prison; the prison should be labeled appropriately on figures.
Hazards: Issues associated with the potential for Valley Fever; risks to project employees and employees/prisoners at Centinela State Prison.
Cumulative Impacts: Consider potential for cumulative impacts of this project and other nonrenewable and renewable energy, and land development projects; cumulative impacts on biological resources, cultural resources, environmental justice, air quality, and recreation uses/users.
Seismic: Potential damage/risks to project associated with seismic activity, including activity on the nearby Elsinore/Laguna Salada fault.

Comments from Mussey Grade Road Alliance
Scoping: Requests that this comment letter be included in the scoping record.
Other Environmental Document: Requests that the Final Environmental Impact Report (EIR) for the Sunrise Power Link project, including its mitigation measures, be incorporated into the record for this project and used to scope the current project.
Project Description: Concerns regarding the commercial viability of the proposed Stirling Energy Systems, LLC (SES) technology; will it work; will it hold up to desert weather; not cost competitive.
Comments from Marilyn Moskowitz
Air Quality: Concerned regarding dust and potential health (asthma) effects on children.
Water Use: Objects to the use of drinkable water from the Ocotillo aquifer for industrial uses.
Project Description: Concerned that cleanup costs be provided in a bond.
Project Description: Concerned other technologies will quickly make the Solar Two technology obsolete.
Comments from Richard A. Ayers
Project Description: Who is financially responsible for cleanup if the technology is not successful; taxpayer liability?
Project Description/Purpose: Relationship to the Southwest Power Link and role of Sempra.
Project Description: SunCatcher reliability is not proven in actual operations.
Project Description: Issues related to metal creep, metal fatigue, and seal integrity.
Project Description: Need a level of project between small amount of units tested at Sandia and total proposed number of units for the Solar Two project; suggest 1 megawatt (MW)
Comments from Cheryl Lenz
Project Description: Who is financially responsible for cleanup if the technology is not successful; taxpayer liability?
Project Description: SunCatcher reliability is not proven in actual operations.
Air Quality: Effects of sand storms and “white clouds” from Plaster City.
Project Description: Need a level of project between small amount of units tested at Sandia and total proposed number of units for the Solar Two project; suggest 1 MW
Comments from Charlene Ayers (letter dated 1/2/09)
Project Description: Concerns regarding viability of technology and availability of technical information on the technology.
Project Description: Potential effects of sand on the facility.
Project Description: Commercial availability and viability of the technology.
Comments from Donna Tisdale
Alternatives: Other technologies are less destructive, expensive, and time consuming for approvals/litigation.
Project Funding: Concerned regarding availability/sources of funding.
Project Description: SunCatcher reliability is not proven in actual operations.
Project Description: Construction of SunCatchers on site: where will that facility be, how big will it be, what are the impacts of that facility?
Land Use: Definition of “limited use” designation.
Cultural Resources: Potential for additional cultural resources in the area.
Recreation: Impacts on recreation uses and users.
Visual Resources: Effects of motion-sensitive lighting.
Project Description: Need data on current wind conditions to understand the effects of wind resulting in downtime.

Project Description: Does Sunrise Power Link have sufficient transmission capacity available for the Solar Two project? If not, are there other sources of capacity available?
Socioeconomics: What kind of jobs at what skill levels will be created? Will those jobs be met by existing employees in Imperial County or other American workers or will they require employees from other countries?
Visual: Potential for glare impacts on motorists on Interstate 8, other streets, and United States Navy, United States Border Patrol, and general aviation activities in the area.
Visual: Potential for project and cumulative visual impacts.
Cultural Resources: Potential for project and cumulative impacts on cultural resources.
Air Quality: Potential project impacts related to dust, hydrogen gas, and diesel emissions, and cumulative impacts with other area land uses.
Water Use: Not clear that IID has committed to provide the water needed for the project.
Hydrology: Effects on watercourses and groundwater.
Floods: Effects of rare floods on project facilities; project facilities and debris basins located in floodplains.
Project Description: Need better description of evaporation ponds and the waste materials generated in those ponds.
Recreation: Cumulative effects on recreation uses/users and general quiet enjoyment of public lands.
Cumulative Impacts: Potential effects related to a wide range of environmental parameters.
Project Description: Concerned that cleanup costs be provided in a bond.
Alternatives: Look at different technologies.
Comments from Dennis Trafecanty (letter dated 1/3/09)
Opposed to both the Sunrise Power Link project and the Solar Two project.
Project Description: SunCatcher reliability is not proven in actual operations.
Project Description: Costs to produce electricity too high; refer to the San Diego Smart Energy 2020 report attached to this comment.

Table Source: Final Scoping Report (LSA Associates, Inc. 2009).

Table 5-2 Verbal Comments Received During November 24, 2008, Scoping Meeting

Comments from Connie Bergmark, Resident, Imperial Lakes
Public Participation: Supportive of renewable energy, wants to be kept informed about construction and operations as project progresses.
Comments from Dennis Trafecanty, Protect Our Communities Fund, San Diego Foundation
Project Description: Concerned about Stirling Energy Systems, LLC (SES) and the Solar Two project; concerned about the commercial viability of the project.
Project Description: Concerned about availability of funding for the project.
Project Description: Relationship to the Sunrise Power Link project; does not think Sunrise Power Link project is commercial.
Project Description: Concerned regarding public investment in Sunrise Power Link, which is part of the cost of the Solar Two project.
Purpose and Need: Questions when power will actually be needed in San Diego.
Air Quality and Health and Safety: Health concerns in Imperial Valley, asthma; concerned regarding bringing "dirty" fossil fuels from Mexico to support the San Diego Gas and Electric (SDG&E)/Sempra projects.
Project Description: Do not want transmission lines through open desert or through Anza Borrego Desert State Park.
Impacts to big horn sheep and sheep migration route to Mexico.
Comments from Karen Collins
Project Description: Concerned that energy generated will go to San Diego with none to IID.
Project Description: Concern regarding life expectancy of dishes and what happens when they are abandoned.
Cultural Resources: Concerned regarding impacts on cultural resources, National Register of Historic Places resources, Lake Kuwae, District for the Yuha Intaglios, cremation sites.
Alternatives: Suggests sites already disturbed by agricultural uses.
Alternatives: Site closer to water sources to take advantage of gravity flow and avoid the need for pumps.
Water Supplies/Use: Does not think there is sufficient water available for the project.
Comments from Carmen Lucas (pp 86–90)
Cultural Resources: Commenter is a Native American, concerned regarding survival of culture.
Requests that a Native American monitor be included in site surveys.
Cumulative impacts of solar and geothermal projects on Bureau of Land Management (BLM) lands.
Cultural Resources: Wants care taken; area has a lot of pottery deposits that could be sacrificial burial areas.
Cultural Resources: Concerned regarding impacts outside immediate disturbance areas.
Comments from Donna Tisdale
Project Description: Relationship of Solar Two project to the Sunrise Power Link project. What is the need for Sunrise? Is there available capacity in the Southwest Power Link project?
Project Description and Land Use: Concern about the BLM land use amendment and its relationship to the updated resource management plan.
Socioeconomics: Concern that jobs go to local people and not people brought from outside the community.
Project Description: Will project need tax breaks or incentives?
Project Description: Why not build the fabrication factory in the project area?
Visual and Aesthetics, and Public Health and Safety: Concern regarding reflection from mirrors on drivers and aircraft.
Project Description: What will the cost of the Solar Two project be to ratepayers?

Cumulative Impacts: Concerned about cumulative impacts of various renewable energy projects, on 2.5 million acres of BLM lands.
Comments from Edie Harmon
Air Quality: Questions the effect of dust on the mirrors and other moving parts of the Solar Two project.
Project Description: Effects of wind on the project components
Project Description: Concern regarding the differences between Sandia, New Mexico and the Imperial Valley; prototype was a smaller scale and in a different type of area.
Concern regarding impacts on cultural resources.
Project Description: Why isn't the electricity being generated going to nearby land uses or the IID?
Project Description: Is this project dependent on the Sunrise Power Link project?
Alternatives: Why not alternative sources for San Diego in San Diego: rooftop solar, photovoltaics, distributed electricity?
Project Description and Alternatives: Concerned that industry thinks public lands are a less expensive way of getting land than using fallowed farmlands, abandoned feedlots, areas where the soil is sterile, parking lots, rooftops.
Air Quality: Concerns regarding carbon sequestration on the affected lands.

Table Source: Final Scoping Report (LSA Associates, Inc. 2009).

Table 5-3 Verbal Comments Received During December 18, 2008, Scoping Meeting

Comments from Paul Foley, CURE
Biological Resources: Questions regarding the jurisdictional delineation provided by the applicant: status, whether it addresses the transmission or water lines off the project site.
Project Description: Question regarding the value and disposal of scrap metal when the project is decommissioned.
Water Quality and Project Permits: Will the project have a general or individual storm water permit during construction? Have the appropriate water quality control agencies been contacted regarding the project?
Air Quality: Questions regarding air quality permit and dust mitigation.
Project Description and Land Use: Questions regarding parcels that are not part of the project or are immediately adjacent to the project site and how access and other considerations regarding those parcels will be addressed.
Comments from Edie Harmon
Water Use/Supply: Questioned the amount of water that would be stored on site and the issue of evaporation.
Question regarding effects of high total dissolved solids (TDS) in area groundwater.
Project Description and Water Use: Question regarding which aquifer water will come from.
Biological Resources: Comment that wastewater ponds should not be attractive to wildlife.
Project Description and Water Use: Question regarding how much water will be used by project.
*Project Description and Air Quality***:** Question on whether project roads will be paved; issue of dust generation.
Project Description: Question regarding frequency of mirror washing.
Cultural Resources: Concern regarding cultural resources, archaeological sites, historic trails in the area.
Cultural Resources: Concern that cultural studies are conducted by persons familiar with the desert and desert cultures.
Cultural Resources: Concern that Native American issues be handled appropriately and sensitively.
Air Quality and Public Health and Safety: Questions regarding airborne soil fungi and potential effects on prisoners at the State Prison and as a general public health issue.
Alternatives: Look at alternative sites including Mesquite Lake, which is zoned for industrial uses.
Alternatives: Look at an alternative site that is already disturbed, such as for agriculture or feedlots.
Cumulative Impacts: Look at cumulative impacts of all solar projects on BLM lands.
Alternatives: Look at in-base and solar rooftop alternatives.
Air Quality and Socioeconomics: Address climate change and potential effects on demographics in San Diego.
Project Description and Alternatives: Disperse units to provide electricity to the prison, schools, hospitals, etc; or to IID; or to meet high daytime demand in the county.
Project Description: Concerned that use of public land is solely to ensure profitability of the project.
*Visual and Aesthetics***:** Assess visual resources impacts consistent with the BLM Visual Resources Management guidelines.
Project Description and Land Use: Concern on how the plan amendment will be done.
Project Description: Will sources of funding include Federal funding for a private profit-making company?
Project Description: Comments from Dr. Butler on the downtime for the dishes.
Project Description: Concerns regarding the reliability of the process and the ability to provide the number of solar dishes proposed for this and other projects.
Project Description: Concerns about where the engines will be on the site.

Project Description and Biological Resources: Concerns about the evaporation of water from the wastewater ponds; does not want the ponds to be attractive to birds.
Biological Resources: Concern regarding invasive plant species.
Cultural Resources: Wants BLM to work closely with Native Americans.
Comments from Donna Tisdale
Project Description: Concerned with winds on the site; will an anemometer be used?
Cumulative Impacts: Wants cumulative visual impacts addressed, including several projects in the vicinity of the Solar Two project.
Project Description: Concerned that project is in early phases without details on funding and manufacturing of the project components.
Project Description: Concern about whether there is sufficient capacity in the Sunrise Power Link project for the Solar Two project and other projects in line or proposed.
Comments from Teri Weiner, Desert Protective Council
Project Description: Questions regarding how the Solar Two energy generation process works.
Biological Resources: Concerned regarding effects on the burrowing owl.
Biological Resource: Concerned regarding effects on the flat-tailed horned lizard.
Biological Resources and Project Permits: Question regarding need for a Streambed Alteration Agreement from the California Department of Fish and Game.
Project Description: When would construction start? After the environmental process?
Project Description and Land Use: Question on when the draft land use amendment would be released.
Alternatives: Concern regarding use of public lands for so many projects, including renewable energy such as the Solar Two project, when there are alternative areas where those projects could be located.
Visual and Aesthetics: Importance of visual resources in the desert.
Socioeconomics: What are the economic impacts of the project?
*Public Health and Safety***:** Concern regarding glare from mirrors to aircraft.
Cultural Resources: Engage Native American leaders to provide input on the cultural integrity of the area.
Water Use: Concern regarding the demand for water to wash the mirrors.
Comments from Marilyn Moskowitz
Air Quality and Public Health and Safety: Concerned regarding air quality in the area and health effects such as asthma.
Water Sources and Use: Concerned regarding using drinking quality water from the aquifer.
Alternatives: An alternative to Solar Two would be rooftop solar.
Project Description: Concerned about technological obsolescence of the project and who will be financially responsible at that point. Wants a large bond posted for cleanup and restoration of the site.
Alternatives: Shift from large mega stations to decentralized, localized, and alternative sources.

Table Source: Final Scoping Report (LSA Associates, Inc. 2009).

Table 5-4 Summary of Comments Received on the Imperial Valley Solar Project Draft Environmental Impact Statement

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
United States Department of the Interior National Park Service	• Impacts to cultural resources • Cumulative effects • Visual resources impacts • Noise impacts • Recreational resource, the Juan Batista de Anza National Historic Trail	• Section 2.10, Overview of the Cumulative Impacts Analysis • Sections 3.3 and 4.3, Biological Resources • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.10 and 4.10, Noise and Vibration • Sections 3.12 and 4.12, Recreation • Sections 3.16 and 4.16, Visual Resources
United States Environmental Protection Agency	• Comment noting support of the development of renewable energy resources. • Alternatives • Impacts to aquatic and biological resources • Impacts to air quality • Cumulative Impacts • Impacts to cultural resources and need for Tribal Consultation • Purpose and need	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Section 2.10, Overview of Cumulative Impacts Analysis, and under each parameter in Chapter 4, Environmental Consequences • Sections 3.2 and 4.2, Air Quality • Sections 3.3 and 4.3, Biological Resources • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality • Chapter 7, Native American Consultation, Concerns, and Values • Appendix F, Government-to Government Consultation

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
Quechan Indian Tribe	• Alternatives • Impacts to cultural resources • Impacts to biological resources • Government-to-Government consultation • Cumulative impacts to cultural resources • Glint and glare impacts • Impacts and cumulative impacts to the flat-tailed horned lizard • Programmatic Agreement • Identification of cultural resources • Amendment to the *California Desert Conservation Area Plan* (CDCA Plan)	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives including the Proposed Action • Sections 3.3 and 4.3, Biological Resources • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Section 4.9, Land Use and Corridor Analysis • Section 4.16, Visual Resources • Chapter 7, Native American Consultation, Concerns, and values • Appendix F, Government-to Government Consultation • Appendix G, Draft Programmatic Agreement • Appendix I, Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative
Kwaaymii, Laguna Band of Indians	• Cultural resources	• Sections 3.5 and 4.5, Cultural and Paleontological Resources
California Department of Transportation	• Utility encroachment • Traffic control • Glint and glare impacts	• Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.15 and 4.15, Traffic and Transportation • Section 4.16, Visual Resources
State of California Department of Parks and Recreation	• Alternatives • Biological resources • Aesthetic impacts and roads • Erosion • Air quality	• Chapter 2, Alternatives Including the Proposed Action • Sections 3.2 and 4.2, Air Quality • Sections 3.3 and 4.3, Biological Resources • Sections 3.15 and 4.15, Traffic and Transportation

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
		• Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
City of El Centro	The City of El Centro supports the development of the IVS project, development of renewable energy projects, and the renewable energy industry.	Comment noted. No response necessary.
Imperial County	• Impacts to visual resources • Surface water absorption • Westwind water well • Fire protection/emergency response plan and hydrogen gas storage • Airport land use compatibility • Length of construction period • Easements and access to land parcels • Conditional Use Permit (CUP) approval • Water from the New River	• Chapter 2, Alternatives Including the Proposed Action • Sections 3.6 and 4.6, Fire and Fuels Management • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Material • Sections 3.15 and 4.15, Traffic and Transportation • Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
San Diego Gas and Electric	In support of the IVS project and renewable energy development.	Comment noted. No response necessary.
Public Employees for Environmental Responsibility	• Purpose and need, Department of Energy purpose and need, United States Army Corps of Engineers purpose and need • Alternatives • List of references • Surety bonding • Greenhouse gas releases • Wind energy	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Sections 3.3 and 4.3, Biological Resources • Sections 3.4 and 4.4, Climate Change • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.11 and 4.11, Public Health and Safety,

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
	• Water Use • Closure plan • Hydrology and soils • Transmission line safety	and Hazardous Materials • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality • Chapter 9, References
Center for Biological Diversity	• Strongly supports the development of renewable energy production. • Biological resources • Alternative sites • California Energy Commission process • The Federal Land Policy Management Act and the CDCA Plan • Cultural resources • Visual resources • Changes to the route network • Recreational activities • Cumulative impacts • Biological surveys • Inventory of resources • The NEPA process • Purpose and need • Global climate change • Project description • Baseline information • Decommissioning and Reclamation Plan • Evaporation ponds • Fire Plan • Mitigation • Water resources	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Section 2.10, Overview of the Cumulative Impacts Analysis, and under each parameter in Chapter 4, Environmental Consequences • Sections 3.2 and 4.2, Air Quality • Sections 3.3 and 4.3, Biological Resources • Sections 3.4 and 4.4. Climate Change • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.6 and 4.6, Fire and Fuels Management • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.12 and 4.12, Recreation • Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality • Mitigation measures are provided in summary tables in the Executive Summary and are described in detail by environmental parameter in Chapter 4, Environmental Consequences

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
	• Air quality and greenhouse gases • Changes to land use patterns and induced growth • Alternatives analysis (including excluded alternatives)	• Section 4.19, Growth-Inducing Impacts • Appendix D, Public Comments on the Draft Environmental Impact Statement • Appendix I, Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative
Defenders of Wildlife	• Purpose and need • Project alternatives • Cumulative impact analysis • Biological resources • Climate change	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Section 2.10, Overview of the Cumulative Impacts Analysis, and under each parameter in Chapter 4, Environmental Consequences • Sections 3.3 and 4.3, Biological Resources • Sections 3.4 and 4.4, Climate Change
Natural Resource Defense Council and The Wilderness Society	• Biological resources • Water resources • Hydrogen Use • Cultural resources • Project phasing • Purpose and need • Project alternatives • Cumulative impact analysis	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Section 2.10, Overview of the Cumulative Impacts Analysis, and under each parameter in Chapter 4, Environmental Consequences • Sections 3.3 and 4.3, Biological Resources • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.6 and 4.6, Fire and Fuels Management • Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials • Sections 3.17 and 4.17, Hydrology, Water Use and Water Quality

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
		• Appendix H, Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project
Anza Trail Coalition of Arizona	• Cultural resources	• Sections 3.5 and 4.5, Cultural and Paleontological Resources
Backcountry Against Dumps	• The NEPA process • Visual impacts • Mitigation measures • Cultural impacts • Biological impacts • Hydrology and soils impacts • Land use and recreational impacts • Cumulative impacts • Purpose and need • Site Alternatives and reliance on Sunrise Powerlink Project • Sole-source aquifer	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Section 2.10, Overview of the Cumulative Impacts Analysis, and under each parameter in Chapter 4, Environmental Consequences • Sections 3.3 and 4.3, Biological Resources • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.12 and 4.12, Recreation • Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality • Mitigation measures are provided in summary tables in the Executive Summary and are described in detail by environmental parameter in Chapter 4, Environmental Consequences
Basin and Range Watch	• Water use • Visual resources • Biological Resources	• Sections 3.3 and 4.3, Biological Resources • Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
Backcountry Against Dumps	• Water source and the LEDPA • Alternative drainage avoidance • SunCatcher design • The Sunrise Powerlink Project • Alternatives discussion • Greenhouse gas impacts • Sole-source aquifer • Cumulative impacts • Glint and glare study • Flora and fauna • Seismic activity • Visual resources/impacts • Recreation resources/impacts • Noise and vibration	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Section 2.10, Overview of the Cumulative Impacts Analysis, and under each parameter in Chapter 4, Environmental Consequences • Sections 3.3 and 4.3, Biological Resources • Sections 3.4 and 4.4, Climate Change • Sections 3.7 and 4.7, Geology, Soils, Topography, Mineral Resources, and Seismic • Sections 3.10 and 4.10, Noise and Vibration • Sections 3.12 and 4.12, Recreation • Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17 Hydrology, Water Use, and Water Quality • Appendix H, Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project
California Unions for Reliable Energy	• Salton Sea Watershed and Wildlife Refuge • Biological resources • Cultural resources and Native American Traditional Cultural Properties • Project description and alternatives analysis • Seeley Waste Water Treatment Plant • Groundwater, water resources, and water quality • Cryptobiotic crusts, desert pavement, soluble salts, soil binders and indirect effects on washes • Rare and non-listed rare plants • Climate change	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Sections 3.3 and 4.3, Biological Resources • Sections 3.4 and 4.4, Climate Change • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.17 and 4.17 Hydrology, Water Use, and Water Quality • Mitigation measures are provided in summary tables in the Executive Summary and are described in detail by environmental parameter in

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
	• Mitigation • Bighorn sheep and wildlife movement • Off-site alternatives analysis • Compliance with Section 404(b)(1) • The LEDPA	Chapter 4, Environmental Consequences • Appendix E, Seeley Wastewater Treatment Plant Improvements • Appendix H, Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project
California Native Plant Society	• Inadequate plant studies • Mirror washing • Wind erosion • Cumulative effects and the Salton Sea • Dust suppression	• Chapter 2, Alternatives Including the Proposed Action • Sections 3.2 and 4.2, Air Quality • Sections 3.3 and 4.3, Biological Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
BLM California Desert District Advisory Council	Project map	Appendix A, Figures
Edie Harmon and Donna Tisdale	Shortened time frames, response to comments and FEIS	All chapters and sections of the FEIS and Appendix D, Public Comments on the Draft Environmental Impact Statement
Anita Nicklen	In support of solar and renewable energy projects.	Comment noted. No response necessary.
Kim Bauer	Opposed to any further building in the area.	Comment noted. No response necessary.
Glenn Kirby	Opposed to the proposed solar array.	Comment noted. No response necessary.
Gregory Gandrud	Impacts to the night sky.	Sections 3.16 and 4.16, Visual Resources
Cody Hanford	Opposed to developing these (renewable energy) projects on undisturbed, pristine public lands.	Comment noted. No response necessary.
Brendan Hughes	• Impacts to biological, cultural and visual resources • CDCA Plan and place area off limits to development and untested technology.	• Chapter 2, Alternatives Including the Proposed Action • Sections 3.3 and 4.3, Biological Resources • Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.16 and 4.16, Visual Resources
Jamie Shores	Do not allow a solar field to be installed at this area.	Comment noted. No response necessary.

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
Patrick Donnelly	• Biological resources • Impacts to BLM lands	• Chapter 2, Alternatives Including the Proposed Action • Sections 3.3 and 4.3, Biological Resources • Sections 3.9 and 4.9, Land Use and Corridor Analysis
Denis Trafecanty	• Biological resources • Location of public meeting • Solar Technology • Posting a bond • Power lines and public lands	• Chapter 2, Alternatives Including the Proposed Action • Sections 3.3 and 4.3, Biological Resources • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Appendix D, Public Comments on the Draft Environmental Impact Statement
Edie Harmon	• Public input • CEQA and NEPA processes • Project description • Alternative water supply • Air pollution • Visual resource analysis • Alternatives and greenhouse gases • Improved technology • CDCA Plan amendment	• Chapter 1, Introduction and Purpose and Need • Chapter 2, Alternatives Including the Proposed Action • Sections 3.2 and 4.2, Air Quality • Sections 3.4 and 4.4, Climate Change • Sections 3.9 and 4.9, Land Use and Corridor Analysis • Sections 3.16 and 4.16, Visual Resources • Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality • Chapter 5, Consultation, Coordination, and Public Participation • Appendix B, Determination of NEPA Adequacy • Appendix D, Public Comments on the Draft Environmental Impact Statement

Commenting Agency/Party	Summary of Comments by General Topical Area	Where Those Topics Are Addressed in the FEIS
Greg P. Smestad, Ph.D.	• Cultural resources • Cumulative glint and glare	• Sections 3.5 and 4.5, Cultural and Paleontological Resources • Sections 3.16 and 4.16, Visual Resources

Table Source: LSA Associates, Inc. (2010).

Table Key: BLM = United States Bureau of Land Management; CEQA = California Environmental Quality Act; FEIS = Final Environmental Impact Statement; IVS = Imperial Valley Solar; NEPA = National Environmental Policy Act.

Chapter 6
Monitoring and Compliance

The United States Bureau of Land Management (BLM) National Environmental Policy Act (NEPA) Handbook G-1790-1 (January 1, 2008) explains the purpose of monitoring projects as they are implemented. Monitoring can provide important information to the BLM, including whether decisions were implemented as designed, their effectiveness in achieving desired outcomes, and the effectiveness of the mitigation measures. The Record of Decision (ROD) for the Agency Preferred Alternative, should the BLM proceed with that project, will include adoption of a monitoring and enforcement program for the project mitigation. The mitigation for the project is provided in the technical analyses provided in Chapter 4, Environmental Consequences.

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Chapter 7
Native American Consultation, Concerns, and Values

The United States Bureau of Land Management (BLM) has formally invited 11 Native American Tribes to consult at the government-to-government level throughout the review of the Imperial Valley Solar (IVS) project, and has had on-going discussions about this project with Tribal cultural staff and other Tribal organizations. Documentation regarding that consultation is provided in Appendix F, Government-to-Government Consultation. Consultation with Indian Tribes, and discussions with Tribal organizations and individuals, has revealed concern about the importance and sensitivity of cultural resources within and near the IVS project site, concern about cumulative effects to cultural resources, and, further, that they attach significance to the broader cultural landscape. Specifically, the Cocopah Indian Tribe and Kwaaymii Band of Laguna Indians have indicated that certain geological features near the project site hold significant value to the Tribes. Several Tribes have also indicated that they attach sacred, religious, and cultural significance to the cremations/burials that have been identified within the Area of Potential Effect (APE) for the IVS project.

7.1 Native American Heritage Commission Sacred Lands File Search Results

A Sacred Lands File (SLF) search request was submitted to the Native American Heritage Commission (NAHC) on January 4, 2008. The NAHC response letter (January 7, 2008) established that the SLF search for the IVS project site and the surrounding area failed to indicate the presence of Native American cultural resources in those areas. A second letter from the NAHC (January 23, 2008) indicated that the original request and response had been misplaced. The second letter established that the SLF search did indicate the presence of Native American cultural resources in the project area. That letter indicated consultation as the best way to avoid unanticipated discoveries. A list of contacts for adjacent tribes was enclosed with that letter. Specifically, the letter recommended contacting Carmen Lucas for insight regarding specific information about cultural resource locations in the project area. Ms. Lucas, and other interested tribes and tribal individuals, have since been contacted on multiple occasions and have been provided relevant project information. Appendix F summarizes the contacts made with the Tribes as part of the government-to-government consultation.

7.2 Government-to-Government Consultation

With the filing of the application for a right-of-way (ROW) grant for the IVS project, the BLM, as the lead Federal agency, initiated tribal consultation pursuant to the Executive Memorandum of April 29, 1994, as well as other relevant laws and regulations, including Section 106 of the National Historic Preservation Act (NHPA). To date, 11 tribes and 15 additional tribal contacts have been identified and invited to consult on this project. The BLM initiated formal government-to-government consultation by letter in January 2008 and has followed up with 6 additional letters since that time. With each letter, the BLM provided updates on the status of the environmental review process including cultural resource inventories, invited the tribes into government-to-government consultation, and requested their assistance in identifying any issues or concerns. The BLM also requested their assistance in identifying any sacred sites and places of traditional religious and cultural significance which might be affected by the IVS project. The contacts made as part of the government-to-government consultation are provided in Appendix F.

Since January 2008, the BLM has responded to requests for both formal and informal meetings with tribal governments, tribal staff, and tribal members. Additionally, several written comments from tribal contacts have been received to date. Information gathering through field visits to the project area and discussions with various tribal members began in early 2009. Tribal members including those from the Cocopah Indian Tribe, the Quechan Tribe, and the Kwaaymii have visited the project area and viewed cultural resources. Further field visits and tours are expected in the upcoming months as the cultural resources inventory report is finalized and Section 106 consultation continues.

Regarding the presence of human remains within the projects area of potential effects (APE), various tribal elders spoke of the intense spiritual value that cremations in the region have to Native Americans in the region at a December 4, 2009 meeting in El Centro.

As the environmental review and Section 106 consultation processes move forward for the IVS project, the BLM will continue to consult with tribes and interested tribal members on issues or concerns related to cultural resources and the Programmatic Agreement (PA) discussed in more detail in Section 4.5, Cultural Resources.

Chapter 8
List of Preparers

8.1 United States Bureau of Land Management

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Daniel Steward, Resource Branch Chief, El Centro Field Office

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Jeff Childers, NEPA Planning Coordinator, California Desert District

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Thomas Zale, Associate Field Manager, El Centro Field Office

8.2 Reviewing Agencies

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Chapter 9
References

9.1 Organization of the References

The Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was the primary reference used in preparing this FEIS. The SA/DEIS is incorporated by reference in this FEIS. Other references used in the preparation of this FEIS for the Imperial Valley Solar (IVS) project are organized in this section as follows:

- **References from the Staff Assessment/Draft Environmental Impact Statement:** Although the authors of this FEIS did not use the cited references from the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) as primary references, the references from the SA/DEIS are listed here to provide the complete listing of references that were used in the preparation of the SA/DEIS and then the FEIS. Those references are listed by topical area/environmental parameter.
- **Additional References:** These are additional references that were used by the FEIS authors as primary sources of information for the analyses provided in the FEIS.

9.2 References from the Staff Assessment/Draft Environmental Impact Statement

The technical analyses in the SA/DEIS included extensive references by topic or environmental parameter. Those references are listed in the following sections by subject or environmental parameter. The references for the environmental parameters are generally listed in the order in which those parameters are discussed in Chapters 3.0 and 4.0 of this FEIS.

The tn: 00000 in the references below indicates the transaction number under which the item is catalogued in the California Energy Commission (CEC) Docket Unit.

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Chapter 11
Glossary

Advisory Council on Historic Preservation (ACHP)	The ACHP is an independent agency of the United States government that promotes the preservation, enhancement, and productive use of the nation's historic resources, and advises the President and Congress on national historic preservation policy.
affected environment	A description of the existing environment to be affected by the proposed action (40 Code of Federal Regulations [CFR] 1502.15).
air emission source	Natural and artificial sources that contribute to a region's air pollution concentrations.
American Society for Testing Materials and Standards (ASTM)	ASTM International, originally known as the American Society for Testing and Materials, is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.
Anza Trail	Refer to the Juan Bautista de Anza National Historic Trail.
Archaic Period	The name Archaic Period is given by archaeologists to the earliest periods of a culture. In particular, as it is used in this Final Environmental Impact Statement (FEIS), it refers to the Archaic period in the Americas (8000 BC–1000 BC).
Area of Critical Environmental Concern (ACEC)	The Federal Land Policy and Management Act (FLPMA) defines an ACEC as an area "…within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards."

Area of Potential Effects (APE)

The APE is defined as the total geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties per 36 Federal Register (FR) 800.16(d). This also includes detours, the locations of construction signage, any areas that will be used for construction access, and later for maintenance of the completed project. The APE is influenced by the scale and nature of an undertaking and includes those areas that could be affected by a project prior to, during, and after construction.

average daily traffic (ADT)

ADT is the average number of vehicles passing a specific point (in both directions) in a 24-hour period, normally measured throughout a year. ADT is the standard measurement for vehicle traffic load on a road segment, and the basis for most decisions regarding transport planning, or to the environmental hazards of pollution related to road transport. Road authorities have norms based on ADT, with decisions to expand road capacity at given thresholds.

Best Available Control Technology (BACT)

BACT is a pollution control standard mandated by the Federal Clean Air Act. The United States Environmental Protection Agency (EPA) determines what air pollution control technology will be used to control a specific pollutant to a specified limit. When a BACT is determined, factors such as energy consumption, total source emission, regional environmental impact, and economic costs are taken into account. It is the current EPA standard for all polluting sources that fall under the New Source Review guidelines and is determined on a case-by-case basis.

The BACT standard is significantly more stringent than the Reasonably Available Control Technology standard but much less stringent than the Lowest Achievable Control Technology standard.

brake-horse power (bhp)

Brake horsepower is the measure of an engine's horsepower without the loss in power caused by the gearbox, alternator, differential, water pump, and other auxiliary components such as power steering pump, muffled exhaust system, etc. The output delivered to the driving wheels is less than that obtainable at the engine's crankshaft. Brake refers to a device which was used to load an engine and hold it at a desired rate of revolutions per minute (RPM). During testing, the output torque and rotational speed are measured to determine the brake horsepower.

Bureau of Land Management (BLM)

The United States Bureau of Land Management manages more Federal land than any other agency, at 253 million surface acres and 700 million subsurface acres of mineral estate. BLM's responsibilities include:

- A leading role in fulfilling the Administration's goals for a new energy economy based on a rapid and responsible move to large-scale production of solar, wind, geothermal, and biomass energy. The BLM also manages Federal onshore oil, gas and coal operations.
- Manage livestock grazing on 157 million acres, as guided by Federal law.
- Undertake extensive land use planning through a collaborative approach with local, State and Tribal governments; the public; and stakeholder groups.
- The National System of Public Lands offer more diverse recreational opportunities than are available on the land of any other Federal agency.
- The Bureau of Land Management's National Landscape Conservation System (NLCS) contains some of the American West's most spectacular landscapes. It includes over 886 federally recognized areas and approximately 27 million acres of National Monuments, National Conservation Areas, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, National Scenic and Historic Trails, and Conservation Lands of the California Desert.

California Energy Commission (CEC)

The CEC is California's primary energy policy and planning agency. Created in 1974 and headquartered in Sacramento, the CEC has responsibility for activities that include forecasting future energy needs, promoting energy efficiency through appliance and building standards, and supporting renewable energy technologies.

California Department of Toxic Substances Control (DTSC)	The DTSC is an agency responsible for ensuring the highest level of safety, and to protect public health and the environment from toxic harm. DTSC is part of the California Environmental Protection Agency (Cal/EPA) and is headquartered in Sacramento.
California Environmental Quality Act (CEQA)	A California law which sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process aids decision makers to determine whether any environmental impacts are associated with a proposed project. It requires environmental impacts associated with a proposed project to be eliminated or reduced, and that air quality mitigation measures have been implemented.
California Occupational Safety and Health Administration (Cal/OSHA)	Cal/OSHA enforces the State of California occupational and public safety laws and provides information and consultative assistance to employers, workers, and the public regarding workplace safety and health issues.
California State Mining Bureau	In 1880, the California State Mining Bureau was established because of the need for information about the gold mining industry. Identified in statute as the Division of Mines and Geology, the current name of this agency is the California Geological Survey, which is a division of the State of California's Department of Conservation. The mission of the California Geological Society is to provide scientific products and services about the State's geology, seismology, and mineral resources that affect the health, safety, and business interests of the people of California.
California Natural Diversity Database (CNDDB)	The California Department of Fish and Game (CDFG) administers and manages the CNDDB, which maintains lists of special-interest plants, animals, and natural communities that occur within the State of California. These species and natural communities, or habitat types, are designated as being of special interest because of their rarity (e.g., very localized distribution, few scattered occurrences) and/or because of threats to their existence. The purpose of these listings is solely informational as there is currently no regulatory protection afforded by these CNDDB listings.

Cenozoic The Cenozoic Era is the most recent of the three classic geological eras and covers the period from 65.5 million years ago to the present. It is marked by the Cretaceous-Tertiary extinction event at the end of the Cretaceous that saw the demise of the last non-avian dinosaurs and the end of the Mesozoic Era. The Cenozoic era is ongoing.

Council on Environmental Quality (CEQ) Established under Title II of the National Environmental Policy Act (NEPA) to develop Federal agency-wide policy and regulations for implementing the procedural provisions of NEPA, resolve interagency disagreements concerning proposed major Federal actions, and to ensure that Federal agency programs and procedures are in compliance with NEPA.

cumulative effects The impact on the environment which results from the incremental impact of a proposed action when added to the effects of other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes those other actions (Council on Environmental Quality Regulations 40 Code of Federal Regulations [CFR] 1508.7).

day-night level (L_{dn}) L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-decibel (dB) penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.

decommissioning Decommissioning is a general term for a formal process to remove something from active status.

donated lands The BLM can be the recipient and trustee of land donated by individuals or groups. Often such lands are donated with the expressed interest of preserving the resources that characterize these lands. In so doing, a restrictive instrument such as a conservation easement or deed restriction is attached to the donation and land that would control its use, often in terms of prohibiting development or changes to the landscape.

effect	A direct result of an action which occurs at the same time and place; or an indirect result of an action which occurs later in time or in a different place and is reasonably foreseeable; or the cumulative results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR 1508.8).
environmental consequences	Environmental effects of project alternatives, including the proposed action, any adverse environmental effects which cannot be avoided, the relationship between short-term uses of the human environment, and any irreversible or irretrievable commitments of resources which would be involved if the proposal should be implemented (40 CFR 1502.16).
Environmental Impact Statement (EIS)	After a federal agency determines that NEPA applies to a proposed action, the agency must decide whether to prepare an EIS. If the agency determines that the proposed action will have significant environmental effects, then it must prepare an EIS. The purpose of an EIS is to inform federal agencies of a proposed action's potential environmental effects and to disclose these potential effects to the public. According to the CEQ NEPA regulations, an EIS must provide a fair discussion of significant environmental impacts and shall inform the decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.
United States Environmental Protection Agency (EPA)	The EPA is the Federal agency charged with protecting human health and the environment, by writing and enforcing environmental regulations based on laws passed by Congress.
Environmentally Sensitive Area (ESA)	An ESA is a designation for an area that needs special protection because of its landscape, wildlife or historical value.
Executive Order (EO)	An EO is an order issued by the President, the head of the Executive Branch of the Federal government. United States Presidents have issued EOs since 1789, usually to help officers and agencies of the Executive Branch manage the operations within the Federal Government itself. EO have the full force of law because issuances are typically made in pursuance of certain Acts of Congress, some of which

	specifically delegate to the President some degree of discretionary power (delegated legislation), or are believed to have their authority for issuances based in a power inherently granted to the Executive Branch by the Constitution.
Farmland Protection Policy Act (FPPA)	Congress passed the Agriculture and Food Act of 1981 (Public Law 97-98) containing the FPPA—Subtitle I of Title XV, Section 1539-1549. The purpose of FPPA is to minimize the impact Federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses.
Farmland	For the purpose of FPPA, farmland includes Prime Farmland, Unique Farmland, and Farmland of Statewide or Local Importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.
Farmland of Statewide Importance	Farmland of Statewide Importance or of local importance is land other than prime or unique farmland but that is also highly productive. Criteria for defining and delineating these lands are determined by the appropriate state or local agencies in cooperation with the United States Department of Agriculture (USDA). The significant difference is that although the criteria are not appropriate outside the state or local area, these lands approach the productivity of lands in their area which meet criteria for prime farmland and unique farmland.
Federal Aviation Administration (FAA)	The FAA is an agency of the United States Department of Transportation (DOT) with authority to regulate and oversee all aspects of civil aviation in the United States (National Airworthiness Authority). The Federal Aviation Act of 1958 created the group under the name "Federal Aviation Agency" and adopted its current name in 1967 when it became a part of the United States Department of Transportation.
Federal Clean Air Act (CAA)	The CAA was enacted by the United States Congress to control air pollution on a national level. It requires the EPA to develop and enforce regulations to protect the general public from exposure to airborne contaminants that are known to be hazardous to human health. The CAA was passed in 1963 and significantly amended in 1970 and 1990. It is listed under the 42 United States Code (USC) Section 7401.

Federal Emergency Management Agency (FEMA)

FEMA is an agency of the United States Department of Homeland Security, initially created by Presidential Order in 1979. The primary purpose of FEMA is to coordinate the response to a disaster that has occurred in the United States and that overwhelms the resources of local and State authorities. The governor of the State in which the disaster occurs must declare a state of emergency and formally request from the President that FEMA and the Federal government respond to the disaster.

Federal Endangered Species Act (FESA)

The Federal Endangered Species Act of 1973 (FESA, 7 USC Section 136, 16 USC Section 1531 et seq.) is one of the dozens of United States environmental laws passed in the 1970s. Signed into law by President Nixon on December 28, 1973, it was designed to protect critically imperiled species from extinction as a "…consequence of economic growth and development untempered by adequate concern and conservation." The ESA is administered by two federal agencies, the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA).

Federal Land Policy and Management Act (FLPMA)

The FLPMA (1976, 43 CFR 1600) provides for the following:

> "Establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the proposed project is that Title V, Section 501 establishes BLM's authority to grant rights-of-way for generation, transmission, and distribution of electrical energy."

Federal Transit Authority (FTA)

The FTA is an agency within the DOT that provides financial and technical assistance to local public transit systems. The FTA is one of 10 modal administrations within the DOT. Public transportation includes buses, subways, light rail, commuter rail, monorail, passenger ferry boats, trolleys, inclined railways, commuter vanpools, and people movers. The Federal government, through the FTA, provides financial assistance to develop new transit systems and improve, maintain, and operate existing systems.

Flat-Tailed Horned Lizard (FTHL) Interagency Coordinating Committee (ICC)	Under the Flat-Tailed Horned Lizard Range Management Strategy, land use applications are reviewed on a case-by-case basis for impacts on the FTHL and their habitat. Individual disturbances over 10 acres must be reviewed by the ICC and Management Oversight Group.
Frac-Out Contingency Plan	A Frac-Out Contingency Plan is an action plan to address what should be done in the event that during horizontal drilling under waters of the U.S. a drilling implement accidentally drills off the intended alignment and punctures a hole where not it was not intended (this is called a "frac-out"). A frac-out could result in an inadvertent release of drilling lubricant into a waterway. The United States Army Corps of Engineers (Corps) and CDFG would require a Frac-Out Contingency Plan to address horizontal drilling under waters of the U.S. prior to the start of construction of the water pipeline.
geoglyph	A geoglyph is a drawing on the ground, or a large motif, (generally greater than 4 meters) or a design produced on the ground, either by arranging clasts (stones, stone fragments, gravel or earth) to create a positive geoglyph (stone arrangement/alignment, petroform, earth mound) or by removing patinated clasts to expose unpatinated ground (negative geoglyph).
global warming	Global warming is the increase in the average temperature of Earth's near-surface air and oceans since the mid-20th century and its projected continuation.
grazing range allotments	Grazing range allotments are designated BLM allotments or pastures for wildlife and livestock. There are currently no BLM rangeland allotments in Imperial County.
greenhouse gas (GHG)	GHGs are gases in the atmosphere that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. The main GHGs in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. GHGs greatly affect the temperature of the Earth; without them, Earth's surface would be on average about 59°F colder than at present.

Herd Areas (HAs) HAs are the geographic areas where wild horse or burro populations were found when the Wild Free-Roaming Horses and Burros Act was passed in 1971. There are 33 designated HAs on BLM lands in California. There are no designated HAs on, adjacent to, or in the immediate vicinity of the Imperial Valley Solar (IVS) project site.

Herd Management Areas (HMAs) HMAs are the geographic sub-areas where wild horse or burro populations were found when the Wild Free-Roaming Horses and Burros Act was passed in 1971. There are 22 designated HMAs on BLM lands in California.

Highway Capacity Manual (HCM) The HCM is a publication of the Transportation Research Board (TRB). It contains concepts, guidelines, and computational procedures for computing the capacity and quality of service of various road facilities, including freeways, highways, arterial roads, roundabouts, signalized and unsignalized intersections, rural highways, and the effects of mass transit, pedestrians, and bicycles on the performance of these systems. The HCM has been a worldwide reference for transportation and traffic engineering scholars and practitioners, and also the base of several country specific capacity manuals.

Holocene The Holocene is a geological epoch which began approximately 12,000 years ago. According to traditional geological thinking, the Holocene continues to the present.

hydrofluorocarbons Hydrofluorocarbons, organic compounds that contain only one or a few fluorine atoms, are the more common type of organofluorine compounds. Used as refrigerants, their atmospheric concentrations are rapidly increasing, causing international concern about their rising contribution to anthropogenic radiative forcing emissions.

invasive species Invasive species are any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.

irreversible and irretrievable commitment of resources

NEPA requires that environmental analysis include identification of "...any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, and other natural or cultural resources.

Juan Bautista de Anza National Historic Trail (Anza Trail)

The Juan Bautista de Anza National Historic Trail (Anza Trail) is a 1,200-mile-long trail corridor that connects Nogales, Arizona with San Francisco, California. The Anza Trail and accompanying auto tour route are jointly managed by the United States National Park Service (NPS) and the BLM under the Juan Bautista de Anza National Historic Trail Comprehensive Management and Use Plan (1996). That Plan indicates that part of the IVS project site is within an area identified as a High Potential Route Segment between two historic expedition campsites (Nos. 47 and 48).

jurisdictional areas

Areas that fall under the jurisdiction of a resource agency such as wetlands or other waters (e.g. streams and lakes) that may fall under the jurisdiction of the CDFG, the State Water Resources Control Board (SWRCB), and/or the Corps under the requirements of the Federal Clean Water Act (CWA).

Key Observation Points (KOPs)

KOPs represent key sensitive viewer groups and key viewing locations identified through visual analysis that could have potential visual impacts as a result of implementing a proposed project.

Least Environmentally Damaging Practicable Alternative (LEDPA)

The LEDPA is the alternative selected by the Corps as the least environmentally damaging most practical alternative for a proposed project.

level of service (LOS)

Traffic conditions on most road facilities are analyzed using the principles or the specific analysis methods in the HCM (2000 Edition). Chapter 16 of the HCM details analysis of signalized intersections that is based on the measurements or forecasts of delay created by traffic controls for traffic using all approaches to the intersection. Transportation engineers describe the quality of traffic flow in terms of LOS on a scale ranging from A (the best) to F (unacceptable), which

	describes the varying conditions on a road during a specific time interval.
Memorandum of Understanding (MOU)	An MOU is a document describing a bilateral or multilateral agreement between parties. It expresses a convergence of will between the parties, indicating an intended common line of action. It is often used in cases where parties either do not imply a legal commitment or in situations where the parties cannot create a legally enforceable agreement. In some cases, depending on the exact wording, MOUs can have the binding power of a contract.
metropolitan statistical area	In the United States, a metropolitan area refers to a geographical region with a relatively high population density at its core and close economic ties throughout the area. A typical metropolitan area is centered around a single large city that wields substantial influence over the region. However, some metropolitan areas contain more than one large city with no single municipality holding a dominant position. Some United States government agencies publish definitions of metropolitan areas for accounting and tracking purposes. The most widely used are those published by the Office of Management and Budget (OMB). These are used by the United States Census Bureau for its demographics statistics and also by many other agencies. The OMB defines a set of core-based statistical areas (CBSAs) throughout the country. CBSAs are delineated on the basis of a central urban area or urban cluster defined as a contiguous area of relatively high population density. CBSAs are subdivided into metropolitan statistical areas (MSAs) and micropolitan statistical areas based on the population of the core urban area.
minimize	To reduce the adverse impact of an action (construction, operation, closure) to the lowest practical level.
Miocene	The Miocene is a geological epoch of the Neogene Period and extends from about 23.03 to 5.33 million years before the present (23.03 to 5.33 million years ago [Ma]). The Miocene follows the Oligocene Epoch and is followed by the Pliocene Epoch. The Miocene is the first epoch of the Neogene Period.

mitigation

As defined in 40 CFR 1508.20, may include one or more of the following: (1) avoiding the impact altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (5) compensating for the impact by replacing, or providing substitute, resources or environments.

multiple use

The management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.

National Environmental Policy Act (NEPA) process

Regulations provided in the CEQ NEPA regulations (40 CFR Parts 1500–1508). The "NEPA process" means all measures necessary for compliance with the requirements of the Purpose (Section 2 of the Act) and the Congressional Declaration of National Environmental Policy (Title 1 of the Act). The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment (40 CFR 1500.1(c)).

National Historic Preservation Act (NHPA)

The NHPA (Public Law 89-665; 16 USC Sections 470 et seq.) is legislation intended to preserve historical and archaeological sites in the United States of America. The NHPA created the National Register of Historic Places (National Register), the list of National Historic Landmarks, and the State Historic Preservation Offices. Section 106 of the NHPA mandates a review process for all federally-funded and permitted projects that will impact sites listed on, or eligible for listing on, the National Register. It allows interested parties an opportunity to comment on projects. The main purpose for the establishment of the Section 106 review process is to minimize potential harm and damage to historic properties.

National Register of Historic Places (National Register)

The National Register is the Federal government's official list of districts, sites, buildings, structures, and objects deemed worthy of preservation. Having a property on the National Register, or located within a National Register Historic District, could result in its eligibility for tax incentives derived from the total value of expenses incurred preserving the property.

Natural Resources Conservation Service (NRCS)

The NRCS, formerly known as the Soil Conservation Service (SCS), is an agency of the United States Department of Agriculture (USDA) that provides technical assistance to farmers and other private landowners and managers. Its mission is to improve, protect, and conserve natural resources on private lands through a cooperative partnership with local and State agencies. While its primary focus has been agricultural lands, it has made many technical contributions to soil surveying, classification and water quality improvement.

North American Electric Reliability Corporation (NERC)

NERC, which is a nonprofit corporation based in Princeton, New Jersey, was formed on March 28, 2006 as the successor to the North American Electric Reliability Council. The original NERC was formed in 1968 by the electric utility industry to promote the reliability and adequacy of bulk power transmission in the electric utility systems of North America. NERC's mission states that it is to "…ensure that the bulk power system in North America is reliable." NERC oversees eight regional reliability entities and encompasses all of the interconnected power systems of the contiguous United States, Canada and part of Baja California in Mexico.

off-highway vehicle (OHV) An OHV is a vehicle registration class for motor vehicles including all terrain vehicles (ATVs), off-highway motorcycles (OHMs), and off-road vehicles (ORVs) such as 4x4 trucks or Jeeps.

operations All functions, work, facilities, and activities in connection with prospecting, exploration, discovery and assessment work, development, extraction, and processing of mineral deposits locatable under the mining laws; reclamation of disturbed areas; and all other reasonably incident uses, whether on a mining claim or not, including the construction of roads, transmission lines, pipelines, and other means of access across public lands for support facilities.

operator A person conducting or proposing to conduct operations.

Passenger Car Equivalent (PCE) PCE is a metric used in transportation engineering, to assess traffic-flow rate on a highway. A PCE is essentially the impact that a mode of transport has on traffic variables (such as headway, speed, density) compared to a single car. For example, typical PCE values are:

- Private car (including taxis or pick-up).....1 PCE
- Bicycle/motorcycle .....0.5 PCE
- Horse drawn vehicle .....4 PCEs
- Bus, tractor, truck.....3.5 PCEs

perfluorocarbons Fluorocarbons, sometimes referred to as perfluorocarbons, are organofluorine compounds that contain only carbon and fluorine bonded together in strong carbon–fluorine bonds. Fluoroalkanes, that contain only single bonds, are more chemically and thermally stable than alkanes. However, fluorocarbons with double bonds (fluoroalkenes) and especially triple bonds (fluoroalkynes) are more reactive than their corresponding hydrocarbons.

Pleistocene The Pleistocene is the epoch from 2.588 million to 12,000 years before present (BP) covering the world's recent period of repeated glaciations.

pollutant transport Pollutant transport is the process by which air pollutants, not generated by local sources, are transported into a region by weather and topography.

Prime Farmland Prime Farmland, as a designation assigned by United States Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses.

project site The area of land identified for a proposed project, including all areas where permanent activities or structures may occur which may also include areas required for construction or maintenance of roads, transmission lines, pipelines, or other means of access.

proposed action A plan that contains sufficient details about the intended actions to be taken, or that will result, to allow alternatives to be developed and its environmental impacts analyzed (40 CFR 1508.23).

public involvement The opportunity for participation by members of the general public in rulemaking, decision making, and planning with respect to public lands, including public meetings or hearings held at locations near the affected lands, or advisory mechanisms, or such other procedures as may be necessary to provide public comment in a particular instance.

Public Lands As defined in 43 U.S.C. 1702, Public Lands means any land and interest in land owned by the United States and administered by the Secretary of the Interior through the BLM, without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf and lands held for the benefit of Indians, Aleuts, and Eskimos.

rain shadow An area of diminished precipitation on the lee side of mountains. There are marked rain shadows, for example, east of the coastal ranges of California, and over a larger region, much of it arid, east of the Cascade Range and Sierra Nevadas. All mountains decrease precipitation on their lee sides; but rain shadows are sometimes not marked if moist air often comes from different directions, as in the Appalachian region. The causes of rain shadow are precipitation of much of the moisture when air is forced upward on the windward

	side of the mountains, deflection or damming of moist air flow, and downward flow on the lee slopes, which warms the air and lowers its relative humidity.
reactive organic compounds	Organic chemical compounds which can affect the environment and human health.
Record of Decision (ROD)	An ROD is a concise public record of the decision reached by a Federal agency, pursuant to NEPA that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).
relationship of short-term uses and long-term productivity	The balance or trade-off between short-term uses and long-term productivity need to be defined in relation to the proposed activity in question. Each resource, of necessity, has to be provided with its own definitions of short- term and long-term (40 CFR 1502.16).
Renewable Portfolio Standard (RPS)	An RPS is a regulation that requires the increased production of energy from renewable sources, such as wind, solar, biomass, and geothermal. The RPS mechanism generally places an obligation on electricity supply companies to produce a specified percent of their electricity from renewable sources. Certified renewable energy generators earn certificates for every unit of electricity they produce and can sell these along with their electricity to supply companies. Supply companies then pass the certificates to some form of regulatory body to demonstrate their compliance with their regulatory obligations. Because it is a market mandate, the RPS relies almost entirely on the private market for its implementation.
right-of-way	Includes land permanently included in a public facility such as a public road, and an easement, lease, permit, or license to occupy, use, or traverse public lands.

Salton Sea The Salton Sea is a saline, endorheic rift lake located directly on the San Andreas Fault in southern California just north of the international border with Mexico. The lake occupies the lowest elevations of the Salton Sink in the Colorado Desert in Imperial and Riverside Counties. Like Death Valley, it is below sea level, with the current surface of the Salton Sea at 226 ft below sea level. The sea is fed by the New, Whitewater, and Alamo Rivers, as well as a number of minor agricultural drainage systems and creeks. The lake covers a surface area of approximately 376 sq mi which makes it the largest lake in California.

Salton trough The Salton Sea occupies the topographically lowest area of the Salton Sink. The Salton Sink is the topographic expression of the Salton trough. The Salton Sink is a geographic sink in the Coachella Valley and Imperial Valley of Southeastern California near the Arizona border. It is in the Colorado Desert subregion of the Sonoran Desert ecoregion. The Salton Sea occupies the topographically lowest area of the sink.

scoping An early and open process for determining the extent and variety of issues to be addressed in an environmental analysis and for identifying the significant issues related to a proposed action (40 CFR 1501.7).

sensitive receptors Land uses such as residences, schools, churches, parks, and hospitals that are susceptible to air quality or noise impacts.

seiche A seiche is a standing wave in an enclosed or partially enclosed body of water. Seiches and seiche-related phenomena have been observed on lakes, reservoirs, swimming pools, bays, and seas. The key requirement for formation of a seiche is that the body of water be at least partially bounded, allowing the formation of the standing wave.

significant The use of the term Significant in NEPA requires consideration of both context and intensity (40 CFR 1508.27):

- **Context:** The significance of an action must be analyzed in its current and proposed short-and long-term effects on the whole of a given resource (e.g.-affected region)
- **Intensity:** This refers to the severity of the effect

Society of Vertebrate Paleontology (SVP)

The SVP was founded in 1940 for individuals with an interest in vertebrate paleontology. The SVP website states that SVP "…is organized exclusively for educational and scientific purposes. The object of the Society is to advance the science of vertebrate paleontology and to serve the common interests and facilitate the cooperation of all persons concerned with the history, evolution, comparative anatomy, and taxonomy of vertebrate animals, as well as field occurrence, collection, and study of fossil vertebrates and the stratigraphy of the beds in which they are found." SVP is also concerned with the conservation and preservation of fossil sites.

Special Areas

The *California Desert Conservation Area Plan* (CDCA Plan) identifies Special Areas as areas "…which possess rare, unique, or unusual qualities of scientific, educational, cultural, or recreational significance (and) may have one of 11 types of 'Special Area' designations applied to them." The Special Areas closest to the IVS project site are the Yuha Desert ACEC, the Jacumba Mountains Wilderness, and the Coyote Mountains Wilderness.

special-status species

Species selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection.

State Historic Preservation Office (SHPO)

The SHPO was created in 1966 under Section 101 of the NHPA. The purposes of SHPO include surveying and recognizing historic properties, reviewing nominations for properties to be included in the National Register, reviewing undertakings for the impact on the properties as well as supporting federal organizations, state and local governments, and private sector. States are responsible for setting up their own SHPO; therefore, each SHPO varies slightly on rules and regulations.

State Implementation Plan (SIP)

An SIP is a State plan for complying with the Federal Clean Air Act, administered by the EPA. The SIP consists of narrative, rules, technical documentation, and agreements that an individual state will use to clean polluted areas.

State Water Resources Control Board (SWRCB) The SWRCB oversees the allocation of the State's water resources to various entities and for diverse uses, including agricultural irrigation, hydro electrical power generation, and municipal water supplies, and for safeguarding the cleanliness and purity of water for potable uses as well as water in streams and the Pacific Ocean beaches. Under the Federal Clean Water Act and the State's pioneering Porter-Cologne Water Quality Control Act, the SWRCB has regulatory authority for protecting the water quality of nearly 1.6 million ac of lakes, 1.3 million acres of bays and estuaries, 211,000 miles of rivers and streams, and about 1,100 miles of the California coastline.

sulfur hexafluoride Sulfur hexafluoride (SF_6) is an inorganic, colorless, odorless, non-toxic and non-flammable gas (under standard conditions). SF_6 has an octahedral geometry, consisting of six fluorine atoms attached to a central sulfur atom. It is a hypervalent molecule. Typical for a nonpolar gas, it is poorly soluble in water but soluble in nonpolar organic solvents. It is generally transported as a liquefied compressed gas. It has a density of 6.13 grams per liter (g/L) at sea level conditions, which is considerably higher than the density of air.

SunCatcher The SunCatcher™ is a proprietary 25-kilowatt-electric (kWe) solar dish system designed to automatically track the sun to collect and focus solar energy on to a power conversion unit (PCU), which generates electricity. The system consists of a solar concentrator in a dish structure that supports an array of curved glass mirror facets. These mirrors collect and concentrate solar energy into electricity. The conversion process in the PCU involves a closed-loop, high-efficiency, four-cylinder reciprocating Solar Stirling Engine, using an internal working fluid that is recycled through the engine. The PCU solar receiver is an external heat exchanger that absorbs the incoming solar thermal energy. This heats and pressurizes the internal working fluid in the heat exchanger tubing and this pressurized gas in turn powers the Solar Stirling Engine.

temperature inversion A layer in the atmosphere in which the temperature increases with altitude. The principal characteristic of an inversion layer is its marked static stability, so that very little turbulent exchange can occur within it. Strong wind shears often occur across inversion layers, and abrupt changes in concentrations of atmospheric particulates and atmospheric water vapor may be

	encountered on ascending through the inversion layer. Also known as thermal inversion.
Traditional Navigable Water (TNW)	A TNW is a water body that qualifies as a "navigable water of the United States" if it meets any of the tests set forth in 33 CFR Part 329: the water body is subject to the ebb and flow of the tide, and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce).
transmission lines	Power lines used to transport electricity from a power generating plant (source) to a substation. The transmission lines are supported above the ground on metal towers. From the substation, smaller power lines transport electricity to the ultimate users such as a residence, business, industrial facility, etc.
tsunamis	A tsunami or tidal wave is a series of water waves (called a tsunami wave train) caused by the displacement of a large volume of a body of water, usually an ocean, but tsunami can occur in large lakes.
United States Department of Energy (DOE)	The DOE is a Cabinet-level department of the United States government concerned with the Federal policies regarding energy, safety in handling nuclear material, energy conservation, energy-related research, radioactive waste disposal, and domestic energy production.
United States Geological Survey (USGS)	The USGS is a scientific agency of the Federal government. The USGS studies the landscape of the United States, its natural resources, and the natural hazards that threaten it. The USGS is focused on four major science disciplines: biology, geography, geology, and hydrology. The USGS is a fact-finding research organization with no regulatory responsibility.
unavoidable adverse effects	Adverse effects of a proposed that can not be avoided. These effects do not have to be avoided by the planning agency, but they must be disclosed, discussed, and mitigated to the extent possible (40 CFR 1500.2(e)).

volatile organic compounds (VOCs)

VOCs refer to organic chemical compounds that have significant vapor pressures and that can affect the environment and human health. VOCs are numerous, varied, and ubiquitous. Although VOCs include both man-made and naturally occurring chemical compounds, it is the anthropogenic VOCs that are regulated, especially indoors where concentrations can be highest. VOCs are typically not acutely toxic but can have chronic effects.

National Wild and Scenic Rivers

The National Wild and Scenic Rivers Act (Public Law 90-542; 16 United States Code [USC] 1271 et seq.) established that certain selected rivers in the United States which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The purpose of this Act is to implement a national wild and scenic rivers system, designating the initial components of that system, and prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

Wilderness Act

The Wilderness Act of 1964 provided for the establishment of a National Wilderness Preservation System with are areas to be designated from public lands.

Wilderness Area

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 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 5 thousand ac 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.

Williamson Act The Williamson Act¸ also referred to as the California Land Conservation Act of 1965, provides relief of property tax to owners of farmland and open-space land in exchange for a ten-year agreement that the land will not be developed or otherwise converted to another use. The motivation for the Williamson Act is to promote voluntary land conservation, particularly farmland conservation.

wind rose A diagram in which statistical information concerning direction and speed of the wind at a location may be summarized. A line segment is drawn in each compass direction from a common origin. The length of a particular line segment is proportional to the frequency with which winds blow from that direction and the thickness of the line segment indicates the frequencies of occurrence of various classes of wind speed.

Yuha Desert The Yuha Desert is a section of the Colorado Desert.

Yuha Desert Area of Special Concern (ACEC) The Yuha Desert ACEC is south of Interstate 8 (I-8) and the IVS project site and is under BLM jurisdiction. It contains several unique attractions, including the Juan Bautista de Anza National Historic Trail, which is an area of rare crucifixion thorns, oyster shell beds, and the Yuha Well.

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