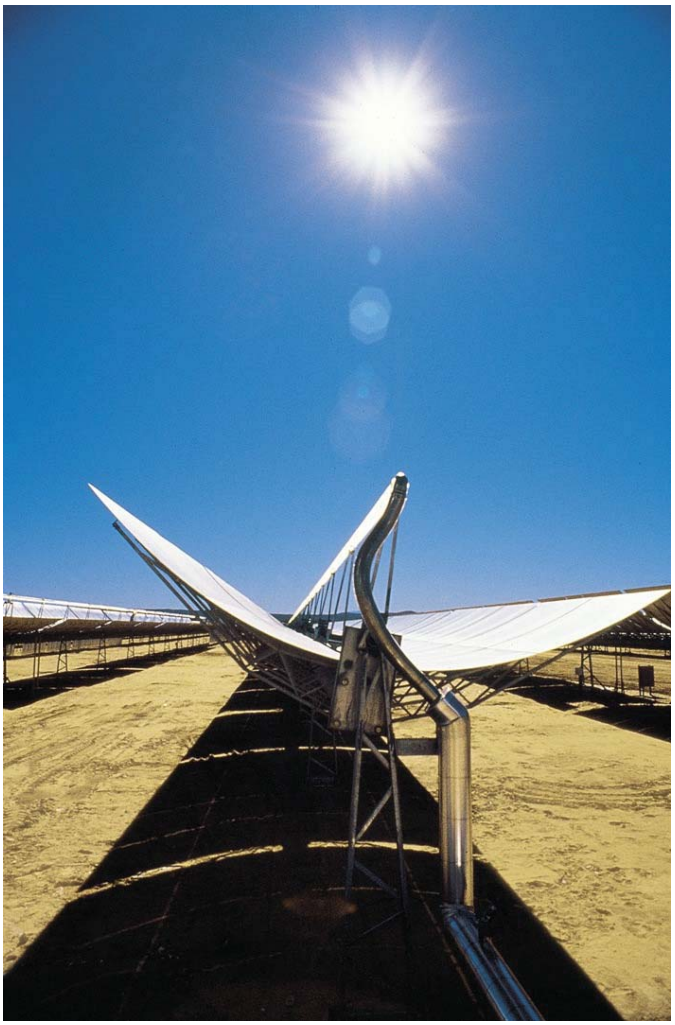
PALEN SOLAR POWER PROJECT

Commission Decision



CALIFORNIA
ENERGY COMMISSION
Arnold Schwarzenegger, Governor

DECEMBER 2010
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DOCKET NUMBER 09-AFC-07

CALIFORNIA
ENERGY COMMISSION

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http://www.energy.ca.gov/sitingcases/solar_millennium_palen/index.html

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DISCLAIMER

This report was prepared by the California Energy Commission Palen Solar Project AFC Committee as part of the Palen Solar Project, Docket No. 09-AFC-7. The views and recommendations contained in this document are not official policy of the Energy Commission until the report is adopted at an Energy Commission Business Meeting.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *PALEN SOLAR POWER PROJECT*

DOCKET NO. 09-AFC-7

ORDER NO. 10-1215-19

COMMISSION ADOPTION ORDER

This Commission Order adopts the Commission Decision on the **Palen Solar Power Project**. The Commission Decision incorporates the Presiding Member's Proposed Decision (PMPD) in the above-captioned matter, the Override Findings, and the Committee Errata. The Commission Decision is based upon the evidentiary record of these proceedings and considers the comments received from the parties and the public. The text of the attached Commission Decision contains a summary of the proceedings, the evidence presented, and the rationale for the findings reached and Conditions imposed.

This **ORDER** adopts by reference the text, Conditions of Certification, Compliance Verifications, and Appendices contained in the Commission Decision. It also adopts specific requirements contained in the Commission Decision which ensure that the proposed facility will be designed, sited, and operated in a manner to protect environmental quality, to assure public health and safety, and to operate in a safe and reliable manner.

FINDINGS

The Commission hereby adopts the following findings in addition to those contained in the accompanying text:

1. The **Palen Solar Power Project** will provide a degree of economic benefits and electricity reliability to the local area.

2. The Conditions of Certification contained in the accompanying text, if implemented by the project owner, ensure that the project will be designed, sited, and operated in conformity with applicable local, regional, state, and federal laws, ordinances, regulations, and standards, including applicable public health and safety standards, and air and water quality standards.

3. Implementation of the Conditions of Certification contained in the accompanying text will ensure protection of environmental quality and assure reasonably safe and reliable operation of the facility. The Conditions of Certification also assure that the project's direct, indirect, and cumulative adverse environmental impacts will be mitigated to the extent feasible. Where full mitigation is not feasible, overriding considerations warrant acceptance of those impacts.

4. The benefits of the **Palen Solar Power Project** outweigh the immitigable significant direct, indirect, or cumulative impacts which may result from its construction or operation.

5. Existing governmental land use restrictions are sufficient to adequately control population density in the area surrounding the facility and may be reasonably expected to ensure public health and safety.

6. The project is subject to Fish and Game Code section 711.4 and the project owner must therefore pay a nine hundred forty-nine dollars and fifty cents ($949.50) fee to the California Department of Fish and Game.

7. No feasible mitigation measures or site or generation technology alternatives to the project, as described during these proceedings, exist which would reduce or eliminate any significant environmental impacts of the mitigated project.

8. An environmental justice screening analysis was conducted and determined that the project, as mitigated, will not have a disproportionate impact on low-income or minority populations.

9. The Commission Decision contains a discussion of the public benefits of the project as required by Public Resources Code section 25523(h).

10. The Commission Decision contains measures to ensure that the planned, temporary, or unexpected closure of the project will occur in conformance with applicable laws, ordinances, regulations, and standards.

11. The proceedings leading to the Commission Decision have been conducted in conformity with the applicable provisions of Commission regulations governing the consideration of an Application for Certification and thereby meet the requirements of Public Resources Code sections 21000 et seq. and 25500 et seq.

ORDER

Therefore, the Commission **ORDERS** the following:

1. The Application for Certification of the **Palen Solar Power Project** as described in this Decision is hereby approved and a certificate to construct and operate the project is hereby granted.

2. The approval of the Application for Certification is subject to the timely performance of the Conditions of Certification and Compliance Verifications enumerated in the accompanying text and Appendices. The Conditions and Compliance Verifications are integrated with the Commission Decision and are not severable therefrom. While the project owner may delegate the performance of a Condition or Verification, the duty to ensure adequate performance of a Condition or Verification may not be delegated.

3. The Commission Decision as described hereinabove is adopted, issued, effective, and final on December 15, 2010.

4. Reconsideration of the Commission Decision is governed by Public Resources Code, section 25530.

5. Judicial review of the Commission Decision is governed by Public Resources Code, section 25531.

6. The Commission hereby adopts the Conditions of Certification, Compliance Verifications, and associated dispute resolution procedures as part of the Commission Decision in order to implement the compliance monitoring program required by Public Resources Code section 25532. All conditions in the Commission Decision take effect immediately upon adoption and apply to all construction and site preparation activities including, but not limited to, ground disturbance, site preparation, and permanent structure construction.

7. The Commission Decision licenses the project owner to commence construction on the project within five years of this adoption date. Subject to the provisions of California Code of Regulations, title 20, section 1720.3, this license expires by operation of law when the project's start-of-construction deadline passes with no construction.

8. The project owner shall provide the Executive Director a check in the amount of nine hundred forty-nine dollars and fifty cents ($949.50) payable to the California Department of Fish and Game.

9. The Executive Director of the Commission shall transmit a copy of the Commission Decision and appropriate accompanying documents, including the Department of Fish and Game fee, as provided by Public Resources Code section 25537, California Code of Regulations, title 20, section 1768, and Fish and Game Code, section 711.4.

10. We order that the Application for Certification docket file for this proceeding be closed on the effective date of the Commission Decision, with the exception that the docket file shall remain open for 30 additional days solely to receive material related to a petition for reconsideration of the Commission Decision.

Dated: December 15, 2010, at Sacramento, California.

KAREN DOUGLAS
Chair

JAMES D. BOYD
Vice Chair

JEFFREY D. BYRON
Commissioner

ANTHONY EGGERT
Commissioner

ROBERT B. WEISENMILLER
Commissioner

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INTRODUCTION

A. SUMMARY OF THE DECISION

This Decision contains the Commission's rationale in determining that the environmental impacts, including compliance with applicable laws, ordinances, regulations and standards (LORS), of the Palen Solar Power Project (PSPP) will be mitigated to the extent feasible, reducing its direct impacts to all environmental resources except visual resources below the level of significance if constructed and operated in accord with Reconfigured Alternative #2 or #3, as described in this Decision. The project would contribute to cumulative impacts to cultural and visual resources, and land use and those contributions are immitigable. However, the benefits of the project warrant our adoption of override findings with respect to those impacts. The project is required for public convenience and necessity and there are no more prudent and feasible means of achieving such public convenience and necessity. The project may therefore be licensed. Our Decision is based exclusively upon the record established during this certification proceeding and summarized in this document. We have independently evaluated the evidence, provided references to the record[1] supporting our findings and conclusions, and specified the measures required to ensure that the PSPP is designed, constructed, and operated in the manner necessary to protect public health and safety, promote the general welfare, and preserve environmental quality.

On August 24, 2009, Solar Millennium, LLC and Chevron Energy Solutions (Applicants), submitted an Application for Certification (AFC) to the Energy Commission to construct the Palen Solar Power Project (PSPP. The Bureau of Land Management (BLM) is conducting its own concurrent process to determine whether to approve a Right of Way (ROW) grant sought by the Applicants which will extend across approximately 5,200 acres of public lands owned by the federal government.

The Energy Commission determined the application to be complete and deemed adequate at the Energy Commission's November 18, 2009 Business Meeting beginning staff's analysis of the proposed project. The Energy Commission has

[1] The Reporter's Transcript of the evidentiary hearings is cited as "date of hearing RT page __." For example: 9/09/10 RT 77. The exhibits included in the evidentiary record are cited as "Ex. number." A list of all exhibits is contained in **Appendix B** of this Decision.

exclusive jurisdiction to license this project and is considering the proposal under a review process established by Public Resources Code section 25540.6.

The proposed Palen Solar Power Project (PSPP) is a concentrating solar thermal electric generating facility with two adjacent and independent units of 250 megawatt (MW) nominal capacity each for a total nominal capacity of 500 MW. The project site is located approximately 0.5 mile north of U.S. Interstate-10 (I-10), approximately 35 miles west of Blythe and approximately 10 miles east of Desert Center, in an unincorporated area of eastern Riverside County, California. The proposed project site includes one privately-owned 40-acre parcel, which has been incorporated into the proposed eastern solar field. The remainder of the Project facilities would be located entirely on BLM-administered land.

Initially, Staff analyzed the proposed project, the Reconfigured Alternative, and the Reduced Acreage Alternative and found that the proposed project and the Reconfigured Alternative would have had substantial impacts to biological resources. The Applicant developed and submitted for consideration two other site configuration alternatives: Reconfigured Alternative #2 and Reconfigured Alternative #3, either of which would reduce impacts to biological resources below the level of significance with the mitigation measures we have imposed in this Decision.

The proposed project would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is brought to a high temperature (750°F) as it circulates through the receiver tubes. The hot HTF is then piped through a series of heat exchangers where it releases its stored energy to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

The single circuit 230-kV generation tie line will exit the northwest corner of the PSPP and travel west and south through BLM lands crossing the I-10 and proceeding south into SCE's planned Red Bluff transmission substation.

Auxiliary boilers, fueled by propane, would be used to speed start-up in the morning and to keep the HTF from solidifying during the night. Propane would be delivered to the plant site via truck from a local distributor and stored in 18,000-gallon above ground tanks (one in each power block). The estimated propane usage per unit for normal operations is 8 MMBtu/hr overnight and 34 MMBtu/hr for one half-hour during startup each morning.

The project would be dry cooled. The project's primary water uses include solar mirror washing, feed water makeup, fire water supply, on-site domestic use, and cooling water for auxiliary equipment heat rejection.

The average water requirement for each of the two power plants is estimated to be about 150 acre feet per year (afy) for a total of 300 afy, which corresponds to an average flow rate of about 188 gallons per minute (gpm), based on pumping 24 hours per day, 350 days per year. Usage rates during operation would vary during the year and would be higher in the summer months when the peak maximum flow rate could be as much as about 50 percent higher (about 275 gpm).

The project water needs would be met by use of groundwater pumped from up to ten wells on the plant site. Water for domestic uses by project employees would also be provided by onsite groundwater treated to potable water standards.

At each solar field, to facilitate dust and contaminant removal, water from the demineralization process would be sprayed on the solar collectors for cleaning. The collectors would be cleaned once or twice per week, determined by the reflectivity monitoring program. This mirror washing operation would be done at night and involves a water truck spraying treated water on the mirrors in a drive-by fashion.

Project construction is expected to occur over a total of 39 months. Project construction would require an average of 566 employees over the entire 39-month construction period, with manpower requirements peaking at approximately 1,145 workers in Month 17 of construction.

While electrical power is to be generated only during daylight hours, PSPP would be staffed 24 hours a day, 7 days per week. A total estimated workforce of 134 full time employees would be needed with both units operating. If approved, project construction would begin in the fourth quarter of 2010, with commercial operation commencing in the second quarter of 2013.

B. SITE CERTIFICATION PROCESS

The PSPP and its related facilities are subject to Energy Commission licensing jurisdiction. (Pub. Res. Code, § 25500 et seq.). During licensing proceedings, the Commission acts as lead state agency under the California Environmental Quality Act (CEQA). (Pub. Res. Code, §§ 25519(c), 21000 et seq.) The

Commission's regulatory process, including the evidentiary record and associated analyses, is functionally equivalent to the preparation of an Environmental Impact Report. (Pub. Res. Code, § 21080.5.) The process is designed to complete the review within a specified time period when the required information is submitted in a timely manner; a license issued by the Commission is in lieu of other state and local permits.

The Commission's certification process provides a thorough review and analysis of all aspects of a proposed power plant project. During this process, the Energy Commission conducts a comprehensive examination of a project's potential economic, public health and safety, reliability, engineering, and environmental ramifications.

Specifically, the Commission's process allows for and encourages public participation so that members of the public may become involved either informally or on a formal level as intervenor parties who have the opportunity to present evidence and cross-examine witnesses. Public participation is encouraged at every stage of the process.

The process begins when an Applicant submits an AFC. Commission staff reviews the data submitted as part of the AFC and makes a recommendation to the Commission on whether the AFC contains adequate information to begin the certification process. After the Commission determines an AFC contains sufficient analytic information, it appoints a Committee of two Commissioners to conduct the formal licensing process. This process includes public conferences and evidentiary hearings, where the evidentiary record is developed and becomes the basis for the Presiding Member's Proposed Decision (PMPD). The PMPD determines a project's environmental impact and conformity with applicable laws, ordinances, regulations, and standards and provides recommendations to the full Commission.

The initial portion of the certification process is weighted heavily toward assuring public awareness of the proposed Project and obtaining necessary technical information. During this time, the Commission staff sponsors public workshops at which intervenors, agency representatives, and members of the public meet with Staff and Applicant to discuss, clarify, and negotiate pertinent issues. Staff publishes its initial technical evaluation of the Project in its Staff Assessment (SA). Staff's responses to public comment on the SA and its complete analyses and recommendations are published in the Revised Staff Assessment (RSA,).

Following this, the Committee conducts a Prehearing Conference to assess the adequacy of available information, identify issues, and determine the positions of the parties. Based on information presented at this event, the Committee issues a Hearing Order to schedule formal evidentiary hearings. At the evidentiary hearings, all formal parties, including intervenors, may present sworn testimony, which is subject to cross-examination by other parties and questioning by the Committee. Members of the public may offer oral or written comments at these hearings. Evidence submitted at the hearings provides the basis for the Committee's analysis and recommendations to the full Commission.

The Committee's analysis and recommendations appear in the PMPD, which is available for a 30-day public comment period. Depending upon the extent of revisions necessary after considering comments received during this period, the Committee may elect to publish a revised version. If so, the Revised PMPD triggers an additional public comment period. Finally, the full Commission decides whether to accept, reject, or modify the Committee's recommendations at a public hearing.

Throughout the licensing process, members of the Committee, and ultimately the Commission, serve as fact-finders and decision-makers. Other parties, including the Applicant, Commission staff, and formal intervenors, function independently with equal legal status. An "ex parte" rule prohibits parties in the case, or other persons with an interest in the case, from communicating on substantive matters with the decision-makers, their staffs, or assigned hearing officer unless these communications are made on the public record. The Office of the Public Adviser is available to assist the public in participating in all aspects of the certification proceeding.

C. PROCEDURAL HISTORY

Public Resources Code, sections 25500 et seq. and Energy Commission regulations (Cal. Code Regs., tit. 20, § 1701, et seq.) mandate a public review process and specify the occurrence of certain procedural events in which the public may participate. The key procedural events that occurred in the present case are summarized below.

On August 24, 2009, the California Energy Commission received an Application for Certification (AFC) from the Applicant to construct and operate the PSPP in Riverside County. The AFC was deemed adequate at the Energy Commission's November 18, 2009 Business Meeting beginning staff's analysis of the proposed

project. The Energy Commission assigned a Committee of two Commissioners to conduct proceedings.

The formal parties included the Applicant, the Energy Commission staff (Staff), Intervenors California Unions for Reliable Energy (CURE), Californians for Renewable Energy, Basin and Range Watch, and the Center for Biological Diversity. The Energy Commission and BLM seek comments from and work closely with other regulatory agencies that administer LORS that may be applicable to proposed projects. They are the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Water Resources Control Board/Regional Water Quality Control Board, State Historic Preservation Officer, California Department of Fish and Game, and the South Coast Air Quality Management District.

On January 11, 2010, the Committee issued a Notice of "Informational Hearing and Site Visit". The Notice was mailed to local agencies and members of the community who were known to be interested in the project, including the owners of land adjacent to or in the vicinity of the PSPP. The Public Adviser's Office also advertised the public hearing and site visit and distributed information to local officials and sensitive receptors surrounding the project site.[2]

On January 25, 2010, the Committee conducted a Site Visit to tour the proposed PSPP site and then convened a public Informational Hearing at the Blythe City Hall Council Chambers in Blythe, CA, which is approximately 35 miles east of the site. At that event, the Committee, the parties, interested governmental agencies, and other public participants discussed issues related to development of the project, described the Commission's review process, and explained opportunities for public participation.

On February 9, 2010, the Committee issued an initial Scheduling Order. The Committee Schedule was based on both Applicant and Staff's proposed schedules and related discussion at the Informational Hearing.

The schedule contained a list of events that must occur in order to complete the certification process within twelve months. The initial schedule covered the period up to the Prehearing Conference. The balance of the schedule was be determined at the Prehearing Conference.

[2] Sensitive receptors are people or institutions with people that are particularly susceptible to illness, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

In the course of the review process, Staff conducted public workshops on December 9, 2009, January 7, 2010, April 28 and 29, 2010 which were publicly noticed Data Response and Issue Resolution workshops held at the Bureau of Land Management (BLM) office in Palm Springs, California. The purposes of the workshops were to provide members of the community and governmental agencies opportunity to obtain project information, and to offer comments they may have had regarding any aspect of the proposed project.

The Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was issued on March 18, 2010. The Energy Commission staff filed Part I of a Revised Staff Assessment (RSA) on September 1, 2010 and Part II of the RSA on September 16, 2010.

The Committee conducted the Prehearing Conference on October 5, 2010 and held Evidentiary Hearings on October 13 and 27, 2010.

The Committee published the PMPD on November 12, 2010, and held a Committee Conference in Sacramento at Commission Headquarters on December 2, 2010. The 30-day comment period on the PMPD ended on December 13, 2010.

D. COMMISSION OUTREACH

Several entities within the Energy Commission provide various notices concerning power plant siting cases. Staff provides notices of staff workshops and the release of the SA and RSA. The Hearing Office notices Committee-led events such as the informational hearing and site visit, status conferences, the prehearing conference, and evidentiary hearings. The Public Adviser's Office provides additional outreach for critical events as well as provides information to interested persons that would like to become more actively involved in a power plant siting proceeding. Further, the Media Office provides notice of events to local and regional press through press releases. The public may also subscribe to the proceeding's e-mail List Server offered on the web page for each project which gives an immediate notification of documents posted to the project web page. Through the activities of these entities, the Energy Commission has made every effort to ensure that interested persons are notified of activities in this proceeding.

E. PUBLIC COMMENT

The record contains public comments from concerned individuals and organizations. Throughout these proceedings, as reflected in the transcribed record, the Committee provided an opportunity for public comment at each Committee-sponsored conference and hearing.

I. PROJECT DESCRIPTION AND PURPOSE

On August 24, 2009, the California Energy Commission received an Application for Certification (AFC) from Palen Solar I, LLC[1] (Applicant) to construct and operate the Palen Solar Power Project (PSPP). The proposed project site is located approximately 0.5 mile north of U.S. Interstate-10 (I-10) approximately 35 miles west of Blythe and approximately 10 miles east of Desert Center, in an unincorporated area of eastern Riverside County, California. On October 26, 2009, a Supplement to the AFC was received and evaluated by Staff. Subsequently, at the Energy Commission's November 18, 2009, Business Meeting, the AFC was deemed complete, beginning Staff's analysis of the proposed project.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The proposed project site includes one privately owned 40-acre parcel, which has been incorporated into the proposed eastern solar field. The remainder of the PSPP facilities would be entirely on Federal land. The Applicant is seeking a right-of-way grant for approximately 5,200 acres of land administered by the Bureau of Land Management (BLM). The disturbance area for construction and operation of the project is currently about 2,970 acres, and does not include the final transmission line, temporary construction power line and telecommunications line.

The SA/DEIS analyzed the proposed project, Reconfigured Alternative #1, and the Reduced Acreage Alternative. In their analysis, Energy Commission staff found that the proposed project and the Reconfigured Alternative #1 would have had substantial impacts to biological resources. Staff was particularly concerned about the biological impacts to the Mojave fringe-toed lizard and the sand transport corridor.

The Applicant disagrees that the project as originally proposed would result in immitigable significant adverse impacts to biological resources; however, in an effort to accommodate Staff's and the other biological agencies' concerns, the

[1]Chevron Energy Solutions and Solar Millennium have a joint development agreement. Chevron Energy Solutions applied for the Right of Way for Palen Solar Power Project. To facilitate the permitting of the PSPP, the Applicant is requesting that the CEC issue one license to a project-specific company. The company for PSPP is Palen Solar I, LLC a wholly owned subsidiary of Solar Millennium and the single applicant for the PSPP.

Applicant developed and submitted for consideration two other site configuration alternatives: Reconfigured Alternative #2 and Reconfigured Alternative #3.

A key difference between Reconfigured Alternative #2 and Reconfigured Alternative #3 is in the use of 240 acres of private land near the southeast corner of the PSPP by Reconfigured Alternative #2. The Applicant is currently discussing the possibility of purchasing this private land with the landowners. Therefore, both Staff and Applicant have requested that we consider both Alternative #2 and Alternative #3 for certification.

1. Description

PSPP would consist of two adjacent, independent units of 250 megawatt (MW) nominal capacity each for a total nominal capacity of 500 MW.

The proposed project would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is brought to a high temperature (750°F) as it circulates through the receiver tubes. The hot HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

2. Individual Components of the proposed project

Solar Collector Assemblies - The project's SCAs are oriented north-south to rotate east-west to track the sun as it moves across the sky throughout the day. The SCAs collect heat by means of linear troughs of parabolic reflectors, which focus sunlight onto a straight line of heat collection elements (HCEs) welded along the focus of the parabolic "trough".

Parabolic Trough Collector Loop - Each of the collector loops consist of two adjacent rows of SCAs; each row is about 1,300 feet long. The two rows are connected by a crossover pipe. HTF is heated in the loop and enters the header, which returns hot HTF from all loops to the power block where the power generating equipment is located.

Mirrors - The parabolic mirrors to be used in the project are low-iron glass mirrors. Typical life spans of the reflective mirrors are expected to be 30 years or more.

Heat Collection Elements - The Heat Collection Elements (HCEs) of the four solar plants are comprised of steel pipes surrounded by an evacuated glass tube insulator. The steel pipe has a coated surface, which enhances its heat transfer properties with a high absorptivity for direct solar radiation, accompanied by low emissivity.

Glass-to-metal seals and metal bellows are incorporated into the HCE to ensure a vacuum-tight enclosure. The enclosure protects the coated surface and reduces heat losses by acting as an insulator.

HTF System - In addition to the HTF piping in the solar field, each of the four HTF systems includes three elements: 1) the HTF heat exchanger, 2) the HTF expansion vessel and overflow vessel, and 3) the HTF ullage system. A heat exchanger would be used to help ensure system temperature stays above 54°F (12°C). The HTF expansion vessel and overflow vessel are required to accommodate the volumetric change that occurs when heating the HTF to the operating temperature. During plant operation, HTF would degrade into components of high and low boilers (substances with high and low boiling points). The low boilers are removed from the process through the ullage system.

Solar Steam Generator System - The steam generated in the SSG is piped to a Rankine-cycle reheat steam turbine. Heat exchangers are included as part of the SSG system to preheat and boil the condensate, superheat the steam, and reheat the steam.

Steam Turbine Generator - The Steam Turbine Generator (STG) receives steam from the SSG. The steam expands through the STG turbine blades to drive the steam turbine, which then drives the generator, converting mechanical energy to electrical energy.

3. Operation of the Solar Fields

a. Warm up

Usually in the morning, the warm up mode brings the HTF flow rate and temperatures up to their steady state operating conditions. It does this by positioning all required valves, starting the required number of HTF main pumps for establishing a minimum flow within the solar field and tracking the solar field collectors into the sun.

b. Solar Field Control Mode

Solar field control mode begins automatically after warm-up mode. HTF main pump speeds are regulated to maintain the design solar field outlet temperature. If the thermal output of the solar field is higher than the design capacity of the steam generation system, collectors within the solar field are de-focused to maintain design operating temperatures.

c. Shutdown

If the minimal thermal input to the turbine required by the project's operating strategy cannot be met under the prevalent weather conditions, then shutdown is indicated. Operators would track all solar collectors into the stow position, reduce the number of HTF main pumps to a minimum, and stop the HTF flow to the power block heat exchangers.

d. HTF Freeze Protection System

At each unit, a freeze prevention and protection system would be used for the HTF piping systems when the solar power plant is shut down. Since the HTF freezes at a relatively high temperature (54°F or 12°C), HTF would be routinely circulated at low flow rates throughout the solar field using hot HTF from the storage vessel as a source. This circulation of the warm HTF overnight typically provides adequate freeze protection. At times where circulation alone is insufficient to provide adequate freeze protection (such as winter nights) the auxiliary boiler, which will typically run at 25 percent capacity overnight to provide steam for the STG steam seals, will be utilized at 100 percent capacity to provide steam to a heat exchanger to further warm the HTF.

4. Major Project Components

The major components and features of the proposed Palen Project include:

- Power Block Unit #1 (east);
- Power Block Unit #2 (west);
- Access road, 1350-feet long, paved, two-way, two-lane with graded shoulders, from existing I-10 Corn Springs Road exit to on-site office;
- Warehouse/maintenance building and laydown area;
- Land Treatment Unit (LTU) for bioremediation/land farming of HTF-contaminated soil;
- On-site transmission facilities, including central internal switchyard;
- Dry wash rerouting; and
- Groundwater wells used for water supply.

The two power blocks are identical in design. The descriptions below apply to power blocks in both units. Major components of each power block include:

- Steam generation heat exchangers;
- HTF overflow and expansion vessels;
- One HTF freeze protection heat exchanger
- One auxiliary boiler;
- One steam turbine-generator (STG);
- One generator step up transformer (GSU);
- Air Cooled Condenser (ACC);
- One wet cooling tower for ancillary equipment;
- Water filter system and clarifier system;
- Combination firewater/clarified water tank;
- Reverse Osmosis (RO) reject water surge tank;
- Potable water system;
- Demineralized Water System;
- Demineralized Water Tank;
- High pH Reverse Osmosis (HERO) waste water recovery system;
- Recovered water surge tank
- Evaporation waste stream pond(s)
- Water and HTF pipelines exiting the power block;
- One above ground, propane storage tank;

- Operations and maintenance buildings; and
- Transmission and telecommunications lines exiting the power block.

5. Fuel Supply and Use

The auxiliary boiler would be fueled by propane. Propane would be delivered to the plant site via truck from a local distributor and stored in 18,000-gallon above ground tanks (one in each power block). The estimated propane usage per unit for normal operations is 8 MMBtu/hr overnight and 34 MMBtu/hr for one half-hour during startup each morning. The boiler will run at 100 percent load overnight when supplemental HTF freeze protection is needed, which is estimated at 100 hours per year.

6. Water Supply and Use

The project would be dry cooled. The project's primary water uses include solar mirror washing, feed water makeup, fire water supply, on-site domestic use, and cooling water for auxiliary equipment and heat rejection.

The average water requirement for each of the two power plants is estimated to be about 150 acre feet per year (afy) for a total of 300 afy, which corresponds to an average flow rate of about 188 gallons per minute (gpm), based on pumping 24 hours per day, 350 days per year. Usage rates during operation would vary during the year and would be higher in the summer months when the peak maximum flow rate could be as much as about 50 percent higher (about 275 gpm).

The project water needs would be met by use of groundwater pumped from wells on the plant site. Water for domestic uses by project employees would also be provided by on-site groundwater treated to potable water standards.

It is expected that new water supply wells in the project site would adequately serve the entire project. Multiple wells would provide redundancy and backup water supply in the event of outages or maintenance of one or more of the other wells.

At each solar field, to facilitate dust and contaminant removal, water from the demineralization process would be sprayed on the solar collectors for cleaning. The collectors would be cleaned once or twice per week, determined by the reflectivity monitoring program. This mirror washing operation would be done at

night and involves a water truck spraying treated water on the mirrors in a drive-by fashion. The Applicant expects that the mirrors would be washed weekly in winter and twice weekly from mid spring through mid fall. Because the mirrors are angled down for washing, water does not accumulate on the mirrors; instead, it would fall from the mirrors to the ground and, due to the small volume, is expected to soak in with no appreciable runoff. Any remaining rinse water from the washing operation would be expected to evaporate on the mirror surface. The treated water production facilities would be sized to accommodate the solar mirror washing demand of about 114 afy.

7. Cooling Systems

The power plant includes two cooling systems: 1) the air-cooled steam cycle heat rejection system and, 2) the closed cooling water system for ancillary equipment cooling.

The cooling system for heat rejection from the steam cycle consists of a forced draft air-cooled condenser, or dry cooling system. At each power block, the dry cooling system receives exhaust steam from the LP section of the STG and condenses it to liquid for return to the SSG.

The auxiliary cooling water systems uses a wet cooling tower for cooling plant equipment, including the STG lubrication oil cooler, the STG generator cooler, steam cycle sample coolers, large pumps, etc. The water is warmed by the various equipment items being cooled and rejects the heat to the cooling tower. This auxiliary cooling system would allow critical equipment such as the generator and HTF pumps to operate at their design ratings during hot summer months when the project's power output is most valuable. An average of 73,000 gallons of water per day (82 afy) would be consumed by the auxiliary cooling water system; the maximum rate of consumption is 112,000 gallons per day in summer.

8. Waste Generation and Management

Project wastes would be comprised of non-hazardous wastes including solids and liquids and lesser amounts of hazardous wastes and universal wastes. The non-hazardous solid waste primarily would consist of construction and office wastes, as well as liquid and solid wastes from the water treatment system. The non-hazardous solid wastes would be trucked to the nearest Class II or III landfill. Non-hazardous liquid wastes would consist primarily of domestic sewage and

wastewater streams such as RO system reject water, boiler blowdown, and auxiliary cooling tower blowdown. A septic tank and leach field system would be installed to manage domestic sewage. All other waste streams will be either recycled or sent to the evaporation pond(s).

a. Wastewater

The PSPP would produce four primary wastewater streams:

- Non-reusable sanitary wastewater produced from administrative centers and operator stations.
- Non-reusable cooling tower blowdown
- Partially recyclable boiler blowdown (to be used as cooling tower makeup)
- Reusable RO and demineralized reject water that will be sent to a HERO type system, or concentrated to minimize waste streams to the evaporation ponds.

Sanitary wastewater production is based on domestic water use. Maximum domestic water use is expected to be less than 166,000 gallons per month (5,500 gallons per day). It is anticipated that the wastewater would be consistent with domestic sanitary wastewater and would have Biological Oxygen Demand and Total Suspended Solids in the range of 150 to 250 mg/L.

b. Wastewater Treatment

Sanitary wastes would be collected for treatment in septic tanks and disposed via leach fields located at the two power blocks as well as at the administration and warehouse areas. Smaller septic systems would be provided for the control room buildings to receive sanitary wastes at those locations. Based on the current estimate of 5,500 gallons of sanitary wastewater production per day, a total leach field area of approximately 11,000 square feet would be required spread out among three or more locations.

The three plant waste water streams, cooling tower blowdown, boiler blow down, and RO/ Demineralizer water rejects will be recycled as much as possible to the High pH Reverse Osmosis system for recovery. The HERO system will recover 70 percent or more (depending on water quality) of this waste stream and greatly limit the size of the required evaporation pond. Some wastewater sources such as cooling tower blowdown or boiler blowdown in certain cases may not be able

to be recovered in the HERO system and would be sent directly to the evaporation pond.

The wastewater system will require two 4-acre evaporation ponds per power block. Two ponds were selected for reliability. The plant will operate using one pond for approximately 24 months, and then switch to the second pond. Approximately 18 months is required for one pond to evaporate and be ready for use again. If a pond requires maintenance or solids removal, the plant can still operate with the other pond. The evaporation ponds will be double-lined and covered with narrow-mesh netting to prevent access by ravens and migratory birds in accordance with applicable regulations.

c. Construction Wastewater

Sanitary wastes produced during construction would be held in chemical toilets and transported off site for disposal by a commercial chemical toilet service. Any other hazardous wastewater produced during construction such as equipment rinse water would be collected by the construction contractor in Baker tanks and transported off site for disposal in a manner consistent with applicable regulatory requirements.

d. On-Site Land Treatment Unit

The two solar fields to be installed at the project would require LTUs to bioremediate or land farm soil contaminated from releases of HTF. The bioremediation unit would be designed in accordance with Colorado River Basin Regional Water Quality Control Board (RWQCB) requirements and is expected to comprise an area of about four acres per solar plant, or eight acres total. The bioremediation facility would utilize indigenous bacteria to metabolize hydrocarbons contained in non-hazardous HTF contaminated soil. A combination of nutrients, water, and aeration facilitates the bacterial activity where microbes restore contaminated soil within two to four months. The California Department of Toxic Substances Control (DTSC) has determined for a similar thermal solar power plant that soil contaminated with up to 10,000 mg/kg of HTF is classified as a non-hazardous waste. However, the DTSC has further indicated that site-specific data would be required to provide a classification of the waste. Soil contaminated with HTF levels of between 100 and 1,000 mg/kg would be land farmed at the LTU, meaning that the soil would be aerated but no nutrients would be added.

9. Other Hazardous and Non-Hazardous Solid and Liquid Waste

Non-hazardous solid wastes may be generated by construction, operation, and maintenance of the project, which are typical of power generation facilities. These wastes may include scrap metal, plastic, insulation material, glass, paper, empty containers, and other solid wastes. Disposal of these wastes would be accomplished by contracted solid refuse collection and recycling services.

Limited hazardous wastes would be generated during construction and operation. During construction, these wastes may include substances such as paint and paint-related wastes (e.g., primer, paint thinner and other solvents), equipment cleaning wastes and spent batteries. During project operation, these wastes may include used oils, hydraulic fluids, greases, filters, spent cleaning solutions, spent batteries, and spent activated carbon. Both construction and operation-phase hazardous waste would be recycled and reused to the maximum extent possible. All wastes that cannot be recycled and any waste remaining after recycling would be disposed of in accordance with all applicable laws, ordinances, regulations and standards (LORS).

10. Hazardous Materials Management

There would be a variety of hazardous materials used and stored during construction and operation of the project. Hazardous materials that would be used during construction include gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints. All hazardous materials used during construction and operation would be stored on-site in storage tanks/vessels/containers that are specifically designed for the characteristics of the materials to be stored; as appropriate, the storage facilities would include the needed secondary containment in case of tank/vessel failure. Above-ground carbon steel tanks (300 gallons) also would be used to store diesel fuel at each power block. Secondary containment would be provided for these tanks.

11. Fire Protection

Fire protection systems are provided to limit personnel injury, property loss, and project downtime resulting from a fire. The systems include a fire protection water system, foam generators, carbon dioxide fire protection systems, and portable fire extinguishers. The location of the project is such that it would fall under the jurisdiction of the Riverside County Fire Department.

Firewater would be supplied from the one million-gallon clarified water storage tanks located at each of the two power blocks on the site. One electric and one diesel fueled backup firewater pump, each with a capacity of 5,000 gpm, would deliver water to the fire protection piping network.

The piping network would be configured in a loop so that a piping failure can be quickly isolated with shutoff valves without interrupting water supply to other areas in the loop. Fire hydrants would be placed at intervals throughout the power block area of the site and would be supplied with water from the supply loop. The water supply loop would also supply firewater to a sprinkler deluge system at each unit transformer, HTF expansion tank and circulating pump area and sprinkler systems at the steam turbine generator and in the administration building. Fire protection for each solar field would be provided by zoned isolation of the HTF lines in the event of a rupture that results in a fire.

12. Telecommunications and Telemetry

The project would have telecommunications service from the telecommunications service provider that serves the Desert Center area. Voice and data communications would be provided by a new twisted pair telecommunications cable. The routing for this cable will follow the routing of the redundant telecommunications line from the project to the Red Bluff Substation. The routing for both of these lines will exit the project site in the right-of-way for the site access road, cross under I-10 west of the Corn Springs Road interchange and proceed to the microwave-repeating tower approximately 700 feet south of the freeway. The routing of the redundant telecommunications line to the SCE Red Bluff Substation will then be hung on the existing 12.47-kV SCE line that feeds the microwave tower and carried- to the Red Bluff Substation. Wireless telecom equipment will be used to support communication with Staff dispersed throughout the project site. The project would utilize electronic telemetry systems to control equipment and facilities operations for the site.

13. Lighting System

The project's lighting system would provide operations and maintenance personnel with illumination in normal and emergency conditions. AC lighting would be the primary form of illumination, but DC lighting would be included for activities or emergency egress required during an outage of the plant's AC system.

14. HTF Leak Detection

Leak detection of HTF would be accomplished in various ways. Visual inspection throughout the solar field on a daily basis would detect leaks occurring at ball joints or other connections. Additionally, the configuration of the looped system allows different sections of the loops to be isolated. Isolation valves will be installed so that each HTF loop section can be isolated in the unlikely event of a major rupture in the HTF piping.

Detection of large leaks is being proposed by using remote pressure sensing equipment and remotely actuated valves to allow for isolation of large sections of the large-bore header piping in the solar field.

15. Water Storage Tanks

In each power block, there would be two major covered water tanks: one 1,000,000-gallon Service/Fire Water storage tank and one 340,000-gallon Demineralized Water storage tank. A much smaller RO reject water tank would also be provided. Several other small water system surge tanks will also be installed in between various steps in the water treatment process. Water storage tanks would be vertical, cylindrical, field erected steel tanks supported on foundations consisting of either a reinforced concrete mat or a reinforced concrete ring wall with an interior bearing layer of compacted sand supporting the tank bottom.

16. Roads, Fencing, and Security

There is an existing highway exit near the southwest boundary of the proposed project site. Access to the project would be via a new 24-foot wide paved access road, 1350 feet long, starting at the existing Corn Springs Road north of I-10. It is anticipated that no improvements to I-10 would be needed.

Only a small portion of the overall plant site would be paved, primarily the site access road, the service roads to the power blocks, and portions of the power block (paved parking lot and roads encircling the STG and SSG areas). The remaining portions of the power block would be gravel surfaced. In total, the power block would be approximately 18.4 acres with approximately six acres of paved area. The solar field would remain unpaved and without a gravel surface in order to prevent rock damage from mirror wash vehicle traffic; an approved dust suppression coating would be used on the dirt roadways within and around

the solar field. Roads and parking areas located within the power block area and adjacent to the administration building and warehouse would be paved with asphalt.

The project solar field and support facilities perimeter would be secured with a combination of chain link and wind fencing. Chain link metal-fabric security fencing, eight feet tall, with one-foot barbed wire or razor wire on top would be installed along the north and south sides of the facilities. Thirty-foot tall wind fencing, comprised of A- frames and wire mesh, would be installed along the east and west sides of each solar field. Tortoise exclusion fencing would be included. Controlled access gates would be located at the site entrance. The proposed drainage channels would be outside the plant facilities and the security fencing but still within the project ROW.

17. Drainage and Earthwork

The existing topographic conditions of the project plant site show an average slope of approximately one foot in 75 feet (1.33 percent) toward the northeast.

The Applicant filed a Streambed Alteration Agreement with the California Department of Fish & Game for the purposes of altering the terrain and installing channels. This application is currently being reviewed.

18. Construction

Project construction is expected to occur over a total of 39 months. Project construction would require an average of 566 employees over the entire 39-month construction period, with manpower requirements peaking at approximately 1,145 workers in Month 17 of construction. The construction workforce would consist of a range of laborers, craftsmen, supervisory personnel, support personnel, and management personnel.

Temporary construction parking areas would be provided within the power plant site adjacent to the laydown area. The plant laydown area would be utilized throughout the build out of the two solar units. The construction sequence for power plant construction includes the following general steps:

1) Site Preparation: this includes detailed construction surveys, mobilization of construction staff, grading, and preparation of drainage features. Grading for the solar field, power block, and drainage

channels would be completed during the first 24 months of the construction schedule.

2) Linears: this includes the site access road, telecommunication line, temporary construction power line and transmission line. The site access road and telecommunication line would be constructed during the first six months of the construction schedule in conjunction with plant site preparation activities. The transmission and telecommunications lines would be constructed during the first 18 months of the construction schedule.

3) Foundations: this includes excavations for large equipment (ACC, STG, SSG, GSU, etc.), footings for the solar field, and ancillary foundations in the power block.

4) Major Equipment Installation: Once the foundations are complete, the larger equipment would be installed. The solar field components would be assembled in an onsite erection facility and installed on their foundations.

a. Construction Water

Construction water requirements cover all construction related activities including:

- Dust control for areas experiencing construction work as well as mobilization and demobilization,
- Dust control for roadways,
- Water for grading activities associated with both cut and fill work,
- Water for soil compaction in the utility and infrastructure trenches,
- Water for soil compaction of the site grading activities,
- Water for stockpile sites,
- Water for the various building pads, and
- Water for concrete pours on site.
- Concrete batch plant operations

The predominant use of water would be for grading activities. Average water use at the site is estimated to be about 1,619,899 gallons (about 4.97 acre-feet) per calendar day. Total construction water use for the duration of the project is estimated to be about 5,750 acre-feet. Construction water would be sourced

from on-site wells. Potable water during construction would be brought on-site in trucks and held in day tanks.

b. Concrete Batch Plant

With the estimated concrete volume of approximately 125,000 cubic yards per solar plant, an on-site batch facility would be utilized to provide concrete for the solar fields and power block foundations and pads. The batch plant would have a production capacity of 150 cubic yards per hour and operate 10 hours per day, five days a week. Night operation of the batch plant will likely be required to overcome the difficulty of performing concrete placement in extremely high ambient temperatures. It would consist of a series of storage bins and piles, conveyors, mixers, ice storage and chipper, and would include a 75 kW power supply (with diesel generator if needed) and provision for dust control. Concrete would be transported from the batch plant to the placement area via a fleet of eight concrete trucks. The batch plant would be movable and would be deployed to the current area of work at the power blocks or main warehouse area.

c. Fuel Depot

A fuel depot would be constructed to refuel, maintain, and wash construction vehicles, and would occupy an area of approximately 75 feet x 150 feet. It would consist of a fuel farm with two 2000-gallon on-road vehicle diesel tanks, two 8,000-gallon off-road vehicle diesel tanks, one 250-gallon gasoline tank, and a wash water holding tank. The fuel farm would include secondary spill containment, a covered maintenance area, also with secondary containment, and a concrete pad for washing vehicles.

d. Construction Power

Construction power will be provided to the site by Southern California Edison (SCE). Two alternative sources of construction power are being investigated. Both sources feed from the 12.47-kV distribution system in Desert Center on Rice Road. The first alternative would be a new 12.47-kV line built within the 161-kV right-of-way from Rice Road down to the project site. The second alternative would be a new 12.47-kV line built within the surveyed 230-kV transmission line right-of-way from Rice Road back to the project site. This line would be built as a combination of new 12.47 line or hung on the new 230-kV transmission line towers that bring the single circuit 230-kV line back to the project site. The project will include construction of a 12.47-kV internal

distribution system and step down transformers to provide power as needed to construction operations.

19. Operation and Maintenance

While electrical power is to be generated only during daylight hours, PSPP would be staffed 24 hours a day, 7 days per week. A total estimated workforce of 134 full time employees would be needed with both units operating.

20. Transmission System

The PSPP facility would be connected to the SCE transmission system at SCE's proposed new Red Bluff substation which would occupy approximately 90 acres. Currently, there are two locations proposed by SCE for the substation. The new single circuit, 230-kV generation tie line from PSPP to the proposed substation will be approximately 7.5 miles to the south on BLM land.

21. Decommissioning and Restoration

The planned operational life of the project is 30 years, but the facility conceivably could operate for a longer or shorter period depending on economic or other circumstances. If the project remains economically viable, it could operate for more than 30 years. However, if the facility were to become economically non-viable before 30 years of operation, permanent closure could occur sooner. In any event, a Closure, Decommissioning and Restoration Plan would be prepared and put into effect when permanent closure occurs.

The procedures provided in the decommissioning plan would be developed to ensure compliance with applicable LORS, and to ensure public health and safety and protection of the environment. The Decommissioning Plan would be submitted to the CEC and BLM for review and approval prior to a planned closure.

FINDINGS OF FACT

Based upon the evidentiary record, we find as follows:

1. Palen Solar 1, LLC will own and operate the Palen Solar Power Project (PSPP or project), which will be located on approximately 5,200 acres of public land administered by the BLM, in Riverside County, California.

2. The project will have a nominal capacity rating of 500 MW.

3. The project site arrangement generally consists of two adjacent, independent units of solar parabolic troughs, each with a nominal generating capacity of 250 MW.

4. The PSPP facility would be connected to the SCE transmission system at SCE's new Red Bluff substation. Currently, there are two locations proposed by SCE for the substation. The new single circuit, 230-kV generation tie line from PSPP to the proposed substation will be approximately 7.5 miles to the south on BLM land.

5. The project is dry-cooled and will consume no more than 300 acre feet per year of groundwater, primarily for mirror washing, feed water makeup, firewater supply, on-site domestic use, and cooling water for auxiliary equipment and heat rejection.

6. The project and its objectives are adequately described by the relevant documents contained in the record.

CONCLUSION OF LAW

1. The Palen Solar Power Project is described at a level of detail sufficient to allow review in compliance with the provisions of both the Warren- Alquist Act and the California Environmental Quality Act.

II. PROJECT ALTERNATIVES

The California Environmental Quality Act (CEQA) Guidelines and the Energy Commission's regulations require an evaluation of the comparative merits of a range of feasible site and facility alternatives which meet the basic objectives of the proposed project, but would avoid or substantially lessen potentially significant environmental impacts. [Cal. Code Regs., tit. 14, §§ 15126.6(c) and (e); tit. 20, § 1765.]

The range of alternatives, including the "No Project" alternative, is governed by the "rule of reason" and need not include those alternatives whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. [Cal. Code Regs. tit. 14, § 15126.6(f).] Rather, the analysis is necessarily limited to alternatives that the "lead agency determines could feasibly attain most of the basic objectives of the project." (*Id*.)

Because the proposed project would sited on land managed by the U.S. Bureau of Land Management, the Palen Solar Power Project (PSPP) is subject to review under the National Environmental Policy Act (NEPA) in addition to CEQA. The purpose of this alternatives analysis is to comply with State and Federal environmental laws by providing a reasonable range of alternatives which, under CEQA, could substantially reduce or avoid any potentially significant adverse impacts of the proposed project, or under NEPA, would inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.

In addition, state policy favors a "loading order" for meeting electricity needs: first in this order is a preference for adding energy efficiency and demand response, followed by renewables and distributed electricity generation, combined heat and power (cogeneration) and then fuel efficient fossil-fueled generation and infrastructure development. State policy also mandates the reduction of greenhouse gas emissions, the achievement of the 33 percent RPS target by 2020, and the completion of the siting review process in a timely manner to allow certain renewable projects to qualify for the 2009 ARRA cash grant. These policies are discussed further under Project Objectives, below.

The Applicant provided an alternatives analysis in the Application for Certification (AFC), describing the site selection process and project configuration in light of project objectives. (Ex. 1, pp. 4-1 to 4-13.) Staff provided an alternatives analysis in the Revised Staff Assessment (RSA, Exs. 300, section B.2; 301, section B.2).

Intervenor Center for Biological Diversity (CBD) offered testimony and exhibits on this topic. (Exs. 600 - 639; 669; 670, 10/27/10 RT 130:11 – 131:2, 160:2 – 164:13.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Energy Commission staff used the following methodology to analyze project alternatives for the PSPP:

- Develop an understanding of the project, identify the basic objectives of the project, and describe its potentially significant adverse impacts.
- Under CEQA, identify and evaluate technology alternatives to the project such as increased energy efficiency (or demand-side management) and the use of alternative generation technologies (e.g., solar or other renewable or nonrenewable technologies).
- Under CEQA, identify and evaluate alternative locations.
- Under CEQA, evaluate potential alternatives to select those qualified for detailed evaluation.
- Under NEPA, explore and evaluate all reasonable alternatives, and of those reasonable alternatives, identify those that would avoid or minimize adverse impacts or enhance the quality of the human environment.
- Evaluate the impacts of not constructing the project, known as the No Project Alternative under CEQA and the No Action alternative under NEPA.

Based on the noted methodology, each potential alternative was evaluated according to the following criteria for its ability to:

- For CEQA purposes, avoid or substantially lessen one or more of the potential significant impacts of the project.
- For CEQA purposes, meet most of the project objectives.
- For CEQA purposes, not create immitigable significant impacts of its own.
- For NEPA purposes, be consistent with the BLM's purpose and need, which may or may not result in project approval.

(Ex. 300, pp. B.2-6 - B.2-8.)

Elsewhere in this Decision, we have determined that the proposed project would have a significant, immitigable impact on biological and visual resources and make a cumulatively considerable contribution to cumulative adverse impacts which cannot be fully mitigated to cultural and visual resources and land use. We therefore confine our analysis here to the alternatives' potential to reduce or

eliminate those impacts. In all other areas, impacts either do not exist or will be reduced to below a level of significance through implementation of the Conditions of Certification, obviating the need for further consideration of alternatives with respect to those areas.

1. Project Objectives

Based on consideration of objectives proposed by the project Applicant, the following project objectives were identified by Staff to evaluate the viability of alternative sites and generation technologies in accordance with CEQA requirements:

- Construct a utility-scale solar energy project of up to 500 MW and interconnect directly to the CAISO Grid while minimizing additions to electrical infrastructure.
- Locate the facility in areas of high solar insolation.

Staff also evaluated whether alternative sites and generation technologies could meet the following key project objectives:

- Provide clean, renewable electricity and support Southern California Edison (SCE) in meeting its obligations under California's Renewable Portfolio Standard Program (RPS);
- Assist SCE in reducing its greenhouse gas emissions as required by the California Global Warming Solutions Act;
- Contribute to the achievement of the 33 percent renewables RPS target set by California's governor and legislature; and
- Complete the review process in a timeframe that would allow the Applicant to start construction or meet the economic performance guidelines by December 31, 2010 to potentially qualify for the 2009 American Recovery and Reinvestment Act (ARRA) cash grant in lieu of tax credits for certain renewable energy projects.

(Ex. 300, pp. B.2-8, B.2-9.)

2. Alternatives Evaluated

Twenty-four alternatives to the proposed PSPP were developed and evaluated. A number of scoping comments suggested that the project be reconfigured or reduced in size to avoid the northeastern region where impacts to sand dunes and Mojave fringe-toed lizards (MFTL) would be greater and to avoid the desert washes associated with desert tortoise connectivity. After publication of the

SA/Draft EIS, two 500 MW reconfigured alternatives were developed by the Applicant to further reduce or eliminate significant impacts to sand dunes and Mojave fringe-toed lizard. Of the 24 alternatives, four were determined to be both reasonable under NEPA and feasible under CEQA: the Reconfigured Alternative, Reconfigured Alternative #2, Reconfigured Alternative #3, and the Reduced Acreage Alternative. Staff also analyzed the "No Project/No Action" Alternative. A summary comparison of potential impacts for the alternatives that were retained or eliminated is set forth below in **Table 1**. (Ex. 300, pp. B.2-6, B.2-11.)

Alternatives Table 1
Summary of Alternatives Retained and Eliminated

Alternative	Rationale for Retention or Elimination
Alternatives Retained for CEQA and NEPA Analysis	
Reconfigured Alternative – 500 MW	Evaluated in the RSA because it would reduce impacts of the Palen Solar Power Project.
Reconfigured Alternative #2 – 500 MW	Evaluated in the RSA because it would reduce impacts of the Palen Solar Power Project.
Reconfigured Alternative #3 – 500 MW	Evaluated in the RSA because it would reduce impacts of the Palen Solar Power Project.
Reduced Acreage Alternative – 375 MW	Evaluated in the RSA because it would substantially reduce impacts of the Palen Solar Power Project.
No Project/No Action Alternative	Required under CEQA.
Land Use Plan Amendment Alternatives Evaluated Only under NEPA	
Authorize Palen Solar Power Project through a CDCA Land Use Plan Amendment	Action required under the CDCA Plan of 1980, as amended. Additional land use plan amendments depicted in Appendix B would apply to this Alternative.
Authorize Reconfigured Alternative of the same acreage through a CDCA Land Use Plan amendment	A reconfigured project reduces impacts; site location is an action for which an amendment to the CDCA Plan of 1980, as amended, is required. Additional land use plan amendments depicted in Appendix B would apply to this Alternative.
Amend CDCA Land Use Plan for a Reduced Acreage Alternative (375 MW) on the proposed project site	A smaller project reduces impacts; site location is an action for which an amendment to the CDCA Plan of 1980, as amended, is required. Additional land use plan amendments depicted in Appendix B would apply to this Alternative.
Do not approve the ROW grant and do not amend the CDCA Land Use Plan of 1980, as amended.	The first No Action Alternative: deny the ROW application and does not amend the CDCA Land Use Plan of 1980.
Do not approve the ROW grant and amend the CDCA Land Use Plan of 1980, as amended, to make the area unavailable for future renewable development.	The second No Action Alternative: deny the ROW application and amend the CDCA Land Use Plan of 1980 to make the site unavailable for any future renewable development. Additional land use plan amendments depicted in Appendix B would apply to this Alternative.

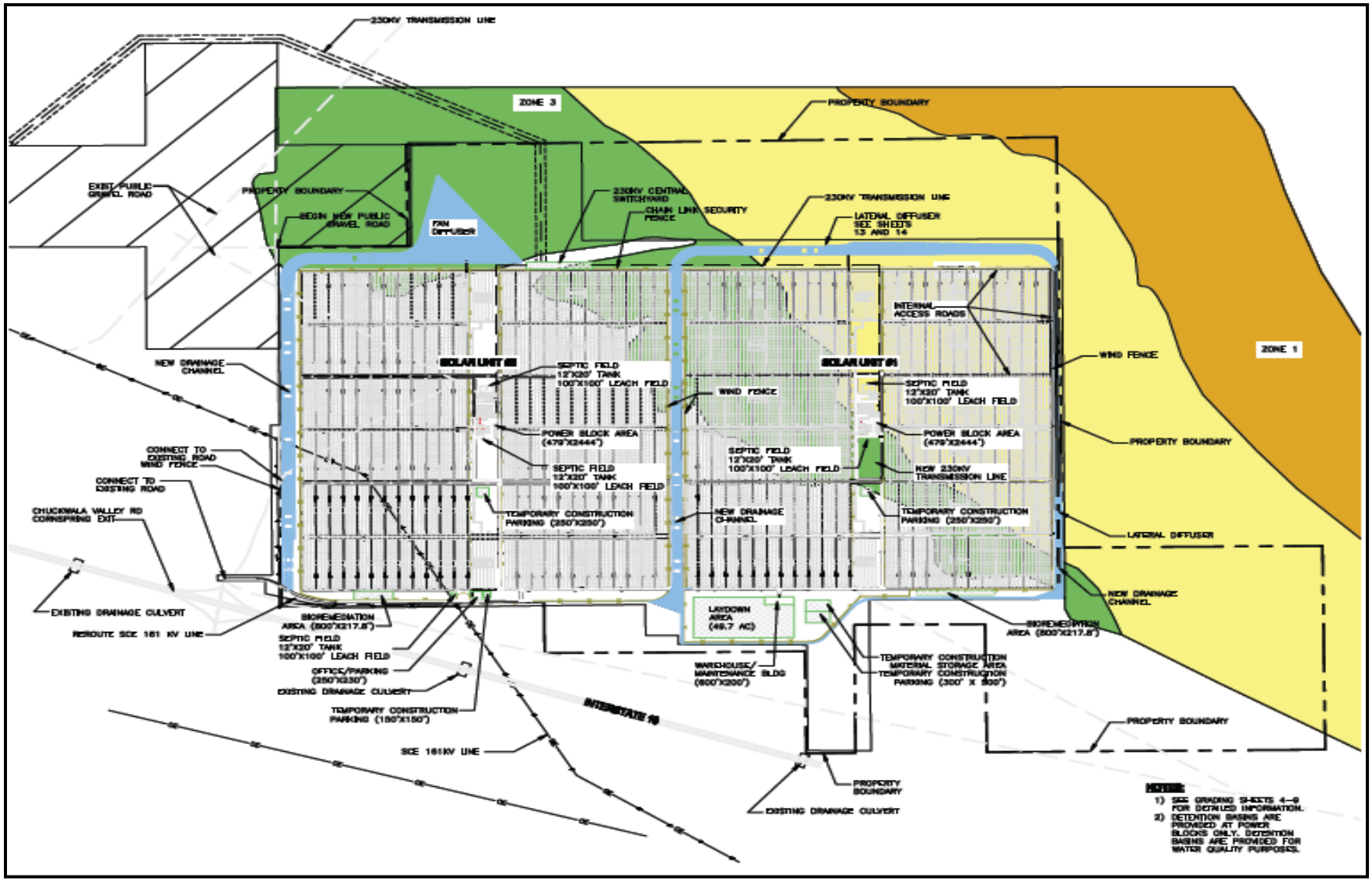
Alternative	Rationale for Retention or Elimination
Do not approve the ROW grant and amend the CDCA Land Use Plan of 1980 to make the area available for future renewable development.	The third No Action Alternative: deny the ROW application but amend the CDCA Land Use Plan of 1980 to make the site available for future solar development.
Site Alternative Evaluated in Detail	
North of Desert Center Alternative	Would substantially reduce impacts of the Palen Solar Power Project while meeting most project objectives.
Site Alternatives Eliminated from Detailed Analysis	
Cibola	Would not substantially reduce impacts of the Palen Solar Power Project.
Palen Pass	Palen Pass region was in an area that would potentially be subsumed in expansions of the Joshua Tree National Park and/or the McCoy Wilderness. In the fall of 2008, the BLM rejected the application for ROW grant for the use of the Palen Pass region.
Desert Center	Infeasible due to location within a Desert Wildlife Management Area.
Palo Verde Mesa	Would not substantially reduce impacts of the Palen Solar Power Project; two pending right-of-way grant application for the site, applications that are first in time are given priority in consideration. Would not be a reasonable alternative for the proposed Palen Solar Power Project unless that other application is rejected or withdrawn.
Technology Alternatives Eliminated from Detailed Analysis	
Stirling Dish Technology	Would not substantially reduce impacts of the Palen Solar Power Project.
Solar Power Tower Technology	Would not substantially reduce impacts of the Palen Solar Power Project.
Linear Fresnel Technology	Would reduce area required by about 40% but would not eliminate significant impacts of the Palen Solar Power Project.
Solar Photovoltaic Technology – Utility Scale	Would reduce water use but not substantially reduce impacts of the Palen Solar Power Project.
Distributed Solar Technology	While it will very likely be possible to achieve 500 MW of distributed solar energy over the coming years, the limited numbers of existing facilities make it difficult to conclude with confidence that this much distributed solar will be available within the timeframe required for the Palen Solar Power Project. Barriers exist related to interconnection with the electric distribution grid. Also, solar PV is one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements, and additional technologies like solar thermal generation, would also be required.
Wind Energy	While there are substantial wind resources in Riverside Counties, environmental impacts could also be significant so wind would not reduce impacts in comparison to the Palen Solar Power Project. Also, wind is one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements, so additional technologies like solar thermal generation, would also be required.

Alternative	Rationale for Retention or Elimination
Geothermal Energy	Despite the encouragement provided by Renewable Portfolio Standards and ARRA funding, few new geothermal projects have been proposed in the Imperial Valley and no geothermal projects are included on the Renewable Energy Action Team list of projects requesting ARRA funds. Therefore, the development of 500 MW of new geothermal generation capacity within the timeframe required for the Palen Solar Power Project is considered speculative.
Biomass Energy	Most biomass facilities produce only small amounts of electricity (in the range of 3 to 10 MW) and so could not meet the project objectives related to the California Renewable Portfolio Standard. In addition, between 100 and 200 facilities would be needed to achieve 500 MW of generation, creating substantial adverse impacts.
Tidal Energy	Tidal fence technology is commercially available in Europe. However, it has not been demonstrated and proven at the scale that would be required to replace the proposed project, particularly with Pacific tides. It may also result in substantial adverse environmental impacts.
Wave Energy	Unproven technology at the scale that would be required to replace the proposed project; it may also result in substantial adverse environmental impacts.
Natural Gas	Would not attain the objective of generating renewable power meeting California's renewable energy needs.
Coal	Would not attain the objective of generating renewable power meeting California's renewable energy needs and is not a feasible alternative in California.
Nuclear Energy	The permitting of new nuclear facilities in California is not currently allowable by law.
Conservation and Demand-side Management	Conservation and demand-management 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

Source: Ex. 300. pp. B.2-3 – B.2-6

The layout of the proposed project is set forth below in **Alternatives Figure 1**.

ALTERNATIVES - FIGURE 1
Palen Solar Power Plant – Proposed Project



a. Reconfigured Alternative

The Reconfigured Alternative would be a 500 MW solar facility, like the proposed project, but it would reconfigure the proposed solar Units 1 and 2 by changing their shapes. Proposed Unit 1 (the eastern solar field) would be reconfigured to avoid use of the northern third of the proposed field. It would result in the separation of Unit 1 into two separate polygons trending southeast. Approximately 240 acres of this reconfigured eastern solar field would be outside of the Applicant's Palen ROW application area but the alternative would remain entirely within BLM managed lands. Proposed Unit 2 (the western solar field) would remain in the same approximate location, but it would be reconfigured into a stair-step shape trending northeast avoiding the primary and secondary washes crossing the site.

The reconfigured units would use approximately 180 acres more land than the proposed Units 1 and 2. In addition to reconfiguring the Unit 1 and 2 solar fields, it would also modify the power block, water treatment system, water storage tanks, and the administration, control, warehouse, maintenance, and lab buildings.

Like the proposed project, the Reconfigured Alternative would transmit power to the grid through the Red Bluff Substation. It would require the same infrastructure as the proposed project, including on-site wells, transmission line, road access, gas pipeline, main office and warehouse buildings, and central internal switchyard. The transmission line, road access, and gas pipeline would remain approximately the same length as for the proposed project. The required linear facility routes would require minor adjustments to accommodate the changed solar field configurations.

(Ex. 300, pp. B.2- 11 – B.2-12.)

We find that the Reconfigured Alternative would not reduce or eliminate the immitigable impacts to biological resources, visual resources, cultural resources, or land use. These impacts would be expected to be nearly the same as for the proposed project because the Reconfigured Alternative would be within the same ROW as the proposed project. Although it could lessen impacts to biological resources because of the reconfiguration of the northeastern portion of the site, other alternatives, described below, reduce those impacts to a much greater extent and are therefore preferable to this alternative.

b. Reduced Acreage Alternative

The Reduced Acreage Alternative would follow boundaries similar to those of the Reconfigured Alternative, but it would be about 25 percent smaller, disturbing about 2,080 acres of land (as compared with 2,790 acres required for Units 1 and 2 of the proposed project).

The Reduced Acreage Alternative would incorporate the following changes from the Reconfigured Alternative:

It would modify the boundaries of Unit 1 as follows:

- Preclude the use of the northeastern quarter of the westernmost solar field; and
- It would reduce and revise the easternmost solar field to avoid the dune habitat.

It would modify the boundaries of Unit 2 as follows:

- Eliminate the southernmost segment of Unit 2 (170 acres within Desert Tortoise Critical Habitat);
- Eliminate the northernmost area of Unit 2 (260 acres of dune sands and MFTL habitat); and
- Add 215 acres to the western end of the second and third rows of solar trough loops to make up for some of the reductions described above.

(Ex. 300, p. B.2-16.)

The Reduced Acreage Alternative would have a net generating capacity of approximately 375 MW (as compared with the 500 MW of the proposed project). Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the Red Bluff Substation. It would require infrastructure including on-site wells, transmission line, road access, administration building, gas pipeline, main office and warehouse buildings, and central internal switchyard. The transmission line and road access would remain approximately the same length as for the proposed project. The gas pipeline would also remain approximately the same length as for the proposed project. The linears would require minor adjustments to accommodate the modified layout.

The Reduced Acreage Alternative would retain the basic solar collector assemblies, retain the north-south alignment of collector rows, and retain all loops at the same size (as required for feasibility of the project design). The Reduced Acreage Alternative disrupts a much smaller area of the sand transport corridor and nearly all of the disruption is within the less sensitive Zone 3. As a result, downwind impacts are greatly reduced under this alternative; additionally, downwind impacts are in less sensitive habitat. While significant, biological resources impacts from this alternative are mitigable. The direct impacts to Mojave fringe-toed lizard under the Reduced Acreage Alternative would be 584 acres, which is substantially less than under the Proposed Project. Indirect impacts are also substantially reduced, and would be over 900 acres less under this alternative. Under the Reduced Acreage Alternative, direct and indirect impacts to Mojave fringe-toed lizard habitat are considered significant but mitigable.

(Ex. 300, p. B.2-16.)

The Reduced Acreage Alternative would reduce, but not eliminate, the immitigable impacts we have identified to land use and visual resources, and the biological resources impacts would be mitigable. Cultural resources cumulative impacts would be expected to be the same as for the proposed project because it will still result in the unearthing, covering, and/or destruction of resources, the nature and extent of which will only be determined as construction proceeds. The Reduced Acreage Alternative would still remove thousands of acres of open space and thus have a cumulatively considerable impact on Land Use. However, this alternative would reduce project output from 500 MW to 375 MW. Either Reconfigured Alternative #2 or #3 would, with mitigation, have a similar effect, while retaining the 500MW output of the proposed project. We therefore find that the Reduced Acreage Alternative is not the superior alternative.

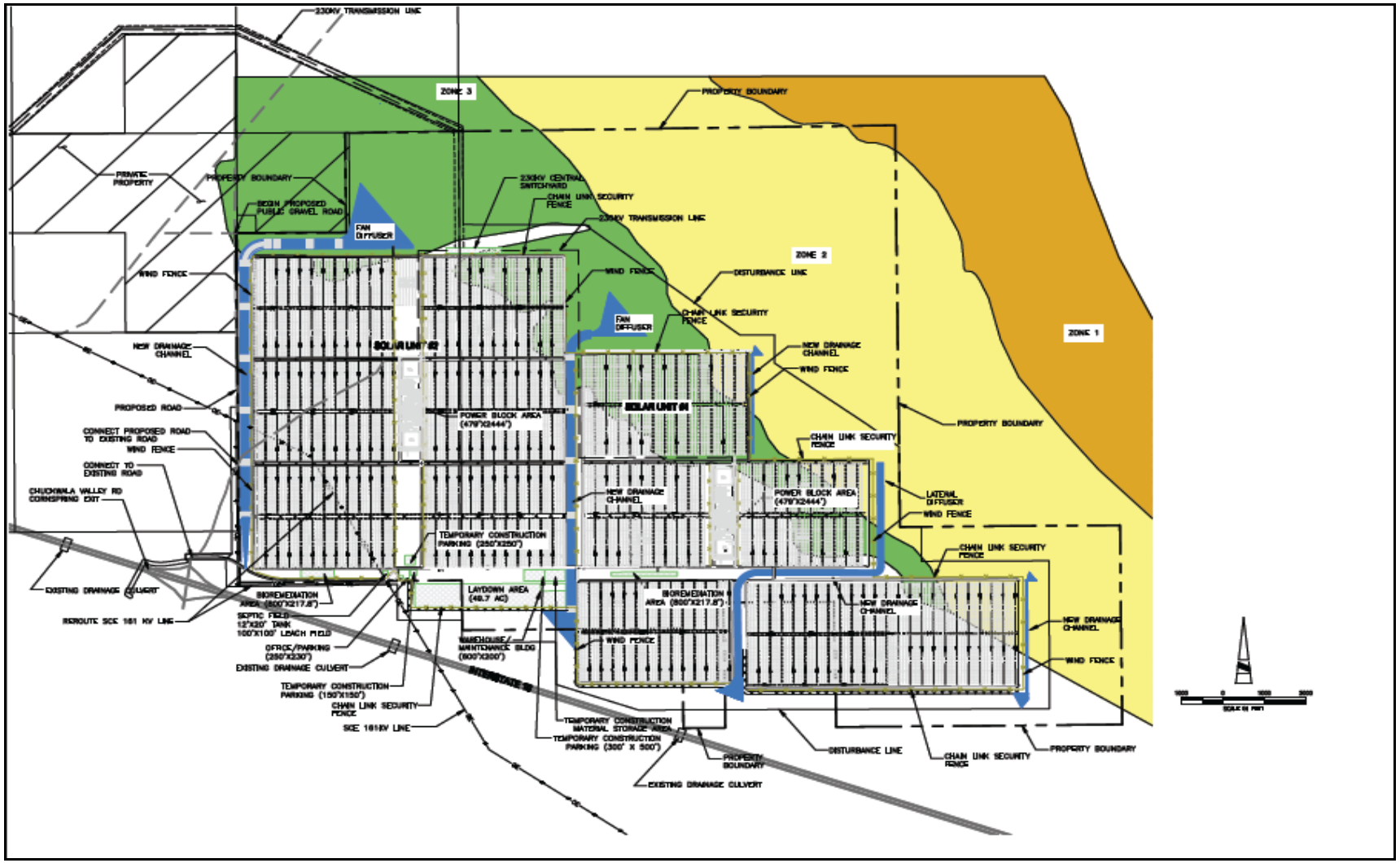
c. Reconfigured Alternative #2

Reconfigured Alternative #2 was defined in June 2010 by the Applicant in response to Staff concerns that the first Reconfigured Alternative would not eliminate significant impacts to the Mojave fringe-toed lizard, sand dune habitat and sand transport corridor. Reconfigured Alternative #2 would be a 500 MW solar facility, like the proposed project, but it would change the shape of Unit 1, as illustrated in **Alternatives Figure 2**. Unit 2 would be unchanged from its design for the proposed project. The overall disturbance area for Reconfigured Alternative #2 would be approximately 4,365 acres. (Ex. 300, p. B.2-12.)

Proposed Unit 1 (the eastern solar field) would be reconfigured to avoid use of the northeastern third of the proposed field. This alternative would reconfigure Unit 1 into a triangular shape trending southeast. This reconfigured eastern solar field would be located partially on public land managed by BLM, on a 40 acre private parcel on which the Applicant has a purchase option, and on two privately owned parcels not currently controlled by Applicant, which total 200 acres, for a total of 240 acres of private lands.

The site plan for Reconfigured Alternative #2 assumes that the Applicant can acquire the 240 acres of private land. This alternative also would require adjustment of the boundaries of the BLM Right-of-Way (ROW) as the alternative includes land not currently included in the proposed ROW.

ALTERNATIVES - FIGURE 2
Palen Solar Power Project - Reconfigured Alternative #2



The grading and drainage detailed design for Reconfigured Alternative #2 will be slightly different from the proposed project, but the drainage concept and the grading approach will be same. Drainage channels for the alternative include the following components:

- The western channel is the same as for the proposed project.
- The central channel is essentially unchanged from the proposed project but would be approximately 800 feet longer than in the proposed project plan. The width and depth of the central channel will remain unchanged. The flow in the channel is also anticipated to be very similar to the proposed project configuration.
- The east channel will be approximately 7,000 feet longer than for the proposed project, but the flows from the upstream areas to the downstream areas will be maintained for peak flows and volumes just as they were in the proposed project.
- Under Reconfigured Alternative #2, one additional drainage channel has been added on the southeast side of the PSPP site to intercept off-site drainage flows. This channel will be engineered in the same fashion as the other channels such that the upstream flow is directed to the same general downstream discharge area as the pre-development flow.
- One additional on-site peripheral channel has been added in the mid-northeastern portion of the Reconfigured Alternative #2 site plan to direct on-site flows to the appropriate downstream area.

Additionally, as with the proposed project, the existing Southern California Edison (SCE) 161-kV Eagle Mountain-Blythe power line which runs in a northwesterly direction across the southwest portion of the PSPP site, would require relocation. PSI is working with SCE to relocate the SCE line within the BLM ROW.

(Ex. 300, pp. B.2-12 – B.2-14.)

Due to its modified shape, the Reconfigured Alternative #2 would reduce impacts to Mojave fringe toed lizards, sand dune habitat, and the sand transport corridor to less than significant. We therefore find that implementation of this alternative would reduce impacts to biological resources to below the level of significance.

Cultural resources cumulative impacts would be expected to be the same as for the proposed project because it will still result in the unearthing, covering, and/or destruction of resources, the nature and extent of which will only be determined as construction proceeds. Visual resources impacts would also be unchanged, or slightly increased, due to this alternative's slightly increased proximity to I-10.

Reconfigured Alternative #2 would still remove thousands of acres of open space and thus have a cumulatively considerable impact on land use.

Reconfigured Alternative #2 appears to be a feasible alternative and is preferred to the proposed project. Its implementation, however, is subject to Applicant's acquisition of private lands.

d. Reconfigured Alternative #3

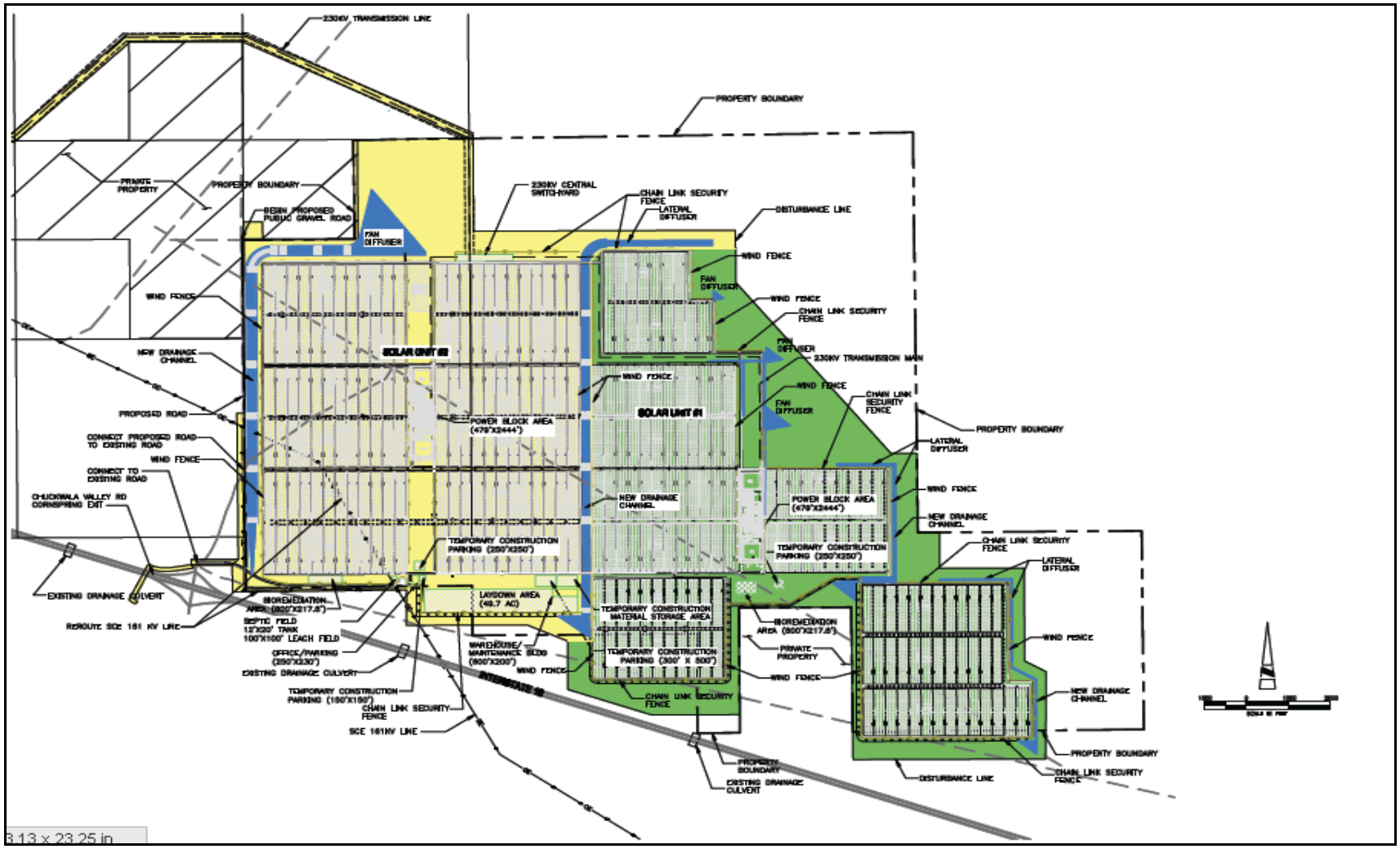
Reconfigured Alternative #3 was also defined in June 2010 by the Applicant in response to concerns regarding the Mojave fringe-toed lizard, sand dune habitat and sand transport corridor. It would be similar to the Reconfigured Alternative #2 but would not require use of private land not currently controlled by the Applicant.

Reconfigured Alternative #3 would generate 500 MW like the proposed project, but it would reconfigure Units 1 and 2, as illustrated in **Alternatives Figure 3**. The total area of disturbance for Reconfigured Alternative #3 would be approximately 4,330 acres. (Ex. 300, p. B.2-14.)

Proposed Unit 1 (the eastern solar field) would be reconfigured to avoid use of the northeastern third of the proposed field. It would reconfigure Unit 1 so that it is triangular in shape trending southeast. However, the reconfigured Unit 1 was designed to avoid use of the private land along its southern border. This reconfigured eastern solar field would be located primarily on public land managed by BLM; however, as with the proposed project, it includes a 40 acre private parcel on which the Applicant has a purchase option. This alternative also would require adjustment of the boundaries of the BLM Right-of-Way (ROW) as the alternative includes land not currently included in the proposed ROW. (*Id*.)

ALTERNATIVES - FIGURE 3

Palen Solar Power Project - Reconfigured Alternative #3



Unit 1 would consist of 288 solar loops and one 250 MW power block. Unit 2 would remain unchanged from the proposed project and would consist of 288 solar loops and one 250 MW power block in the same location as for the proposed project. There are no changes to the power block equipment layout associated with Unit 1, but the entire power block has been shifted south by approximately 2,700 feet (0.5 miles). The evaporation ponds for Unit 1 of Reconfigured Alternative #3 are unchanged in terms of function and size, but they have also been relocated slightly south and east of their location under the proposed project. The Unit 1 bioremediation area remains unchanged in terms of function and size, but has been relocated to the mid-southwesterly portion of the solar field.

The grading and drainage detailed design for Reconfigured Alternative #3 will be slightly different from the proposed project, but the drainage concept and the grading approach will be the same. The drainage plan for the Reconfigured Alternative #3 site includes the west channel exactly as for the proposed project. The central channel is essentially unchanged from the proposed project but would be approximately 5,500 feet shorter than in the proposed project plan. The width and depth of the central channel will remain unchanged. The flow in the channel is also anticipated to be very similar to the proposed project configuration. In addition, the Central Channel lateral diffuser has been replaced with a fan diffuser in this alternative due to the fact that the release point for the drainage water occurs at a location where the fan spread of the pre-development flow is narrower.

The east channel will be approximately 1,000 feet longer than for the proposed project, and the lateral diffuser at the end of the East Channel has been extended approximately 1,200 feet to disperse flows from the solar fields. The additional length of the East Channel will have negligible effect on the peak flows and volumes, and these flows from the upstream areas to the downstream areas will be maintained just as they were in the proposed Project. Under Reconfigured Alternative #3, one additional drainage channel has been added to the southeast side of the PSPP site to intercept off-site drainage flows. This channel will be engineered in the same fashion as the other channels so that the upstream flow is directed to the same general downstream discharge area as the pre-development flow. Two additional on-site peripheral channels and three fan diffusers have been added in the mid-northeastern portion of the Reconfigured Alternative #3 site plan to direct on-site flows to the appropriate downstream area.

Additionally, as with the proposed project, the existing Southern California Edison (SCE) 161-kV Eagle Mountain-Blythe power line which runs in a northwesterly

direction across the southwest portion of the PSPP site, would require relocation. PSI is working with SCE to relocate the SCE line within the BLM ROW.

(Ex. 300, pp. B.2- 14 – B.2-15.)

Due to its modified shape, the Reconfigured Alternative #3 would reduce impacts to Mojave fringe toed lizards, sand dune habitat, and the sand transport corridor to less than significant. We therefore find that implementation of this alternative would reduce impacts to biological resources to below the level of significance.

Cultural resources cumulative impacts would be expected to be the same as for the proposed project because it will still result in the unearthing, covering, and/or destruction of resources, the nature and extent of which will only be determined as construction proceeds. Visual resources impacts would also be unchanged, or slightly increased, due to this alternative's slightly increased proximity to I-10. Reconfigured Alternative #2 would still remove thousands of acres of open space and thus have a cumulatively considerable impact on Land Use.

Reconfigured Alternative #3 appears to be a feasible alternative and is preferred to the proposed project.

e. No Project/No Action Alternative

CEQA No Project Alternative: The CEQA Guidelines state that "the purpose of describing and analyzing a 'no project' alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regs., tit. 14 § 15126.6(i)). The No Project analysis in the RSA, Ex. 300, considers existing conditions and "what would be reasonably expected to occur in the foreseeable future if the project were not approved…" [Cal. Code Regs, tit. 14 § 15126.6(e)(2).]

If the No Project Alternative were selected, the construction and operational impacts of the Palen Solar Power Project would not occur. There would be no grading of the site, no loss of resources or disturbance of desert habitat, and no installation of power generation and transmission equipment. The No Project Alternative would also eliminate contributions to cumulative impacts on a number of resources and environmental parameters in Riverside County and in the Mojave Desert as a whole. (Ex. 300, p. B.2-17.)

In the absence of the Palen Solar Power Project, however, other power plants, both renewable and non-renewable, may have to be constructed to serve the

demand for electricity and to meet RPS. The impacts of these other facilities may be similar to those of the proposed project because these technologies require large amounts of land like that required for the Palen Solar Power Project. The No Project/No Action Alternative may also lead to siting of other non-solar renewable technologies to help achieve the California RPS.

Additionally, if the No Project/No Action Alternative were chosen, additional gas-fired power plants may be built, or existing gas-fired plants may operate longer. If the proposed project were not built, California would not benefit from the reduction in greenhouse gases that this facility would provide, and California utilities would not receive the 500 MW contribution to its renewable state-mandated energy portfolio.

NEPA Alternatives: BLM is considering whether to approve a plan amendment and whether to approve the proposed project or an alternative. BLM's "action alternative" would be to amend the CDCA Plan to include Palen Solar Power Project (500 MW), and to approve the project, or one of the alternatives. The Palen Solar Power Project and ancillary facilities would be approved, a ROW grant issued, and the CDCA Plan amended to include the Palen Solar Power generation facilities and transmission line as an approved use under the Plan.

BLM could also take no action on the project but amend the CDCA plan to make the area available for future renewable development, take no action on the project and amend the CDCA plan to make the area unavailable for future renewable development, or take no action on the project application and on a land use plan amendment.

(Ex. 300, pp. B.2- 17 – B.2-18.)

f. Alternative Evaluated Under CEQA Only: North of Desert Center Alternative

One alternative site was retained for evaluation by the Energy Commission: the North of Desert Center Alternative. This alternative is subject to evaluation under CEQA only, as it is located on private land and the BLM would have no discretionary approval authority. The Energy Commission does not have the authority to approve an alternative or require the Applicant to move the proposed project to another location, even if it identifies an alternative site that meets the project objectives and avoids or substantially lessens one or more of the significant effects of the project.

No specific alternative site for the PSPP was suggested in scoping comments; however, a number of commentors requested that smaller project alternatives be considered and that alternatives on disturbed private lands be considered.

The following site selection criteria identified in the PSPP AFC were used to choose the proposed site:

- The site must receive insolation of no less than 7.0 kilowatt-hours per square meter per day (kWh/m^2/day).
- The site must be large enough (at least 4,000 contiguous acres) and of adequate proportions to include two 250 MW parabolic trough solar thermal plants. The site also must be large enough to site the plants outside of large washes, to the extent possible. The site needs to have no more than a 2 percent grade and should not be located in a flood zone. Competing land uses and land use designations may make the site more difficult to develop.
- The site should not be highly pristine or biologically sensitive (e.g., not within a designated wilderness area, Area of Critical Environmental Concern [ACEC], or a Desert Wildlife Management Area [DWMA]). The site should also not be located within a military base or park.
- The site should be located within approximately 10 miles of a CAISO-interconnected transmission line with a rating of 230 kilovolts (kV) or higher.
- The site should be in reasonable proximity to existing large, paved roads or freeways.
- The land must be available for sale or lease/ROW, at a reasonable cost (e.g., high value irrigated agricultural lands were excluded). If private land, the site should not be subdivided between more than three landowners to avoid lengthy and/or unsuccessful negotiations. If private land, a lease or purchase option arrangement is necessary so that a large capital investment would not be necessary until the license is obtained.
- The site should be close enough to areas with large construction labor pools so as to maximize the number of construction workers within daily commuting range.

(Ex. 300. pp. B.2-18 – B.2-19.)

A number of scoping comments included the criteria list for areas to avoid in siting renewable projects defined by Audubon California and other groups:

- Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant populations of federal or state threatened and endangered species, significant populations of

sensitive, rare and special status species, and rare or unique plant communities;

- Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves;
- Lands purchased for conservation including those conveyed to the BLM;
- Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes;
- Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas;
- Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands;
- National Historic Register eligible sites and other known cultural resources;
- Locations directly adjacent to National or State Park units.

We note that during the FLPMA ROW grant pre-application period, BLM worked closely with the project Applicant to identify a feasible site without known environmental concerns. This effort resulted in identification of the proposed site, which does reflect many of the suggested criteria for siting identified by Audubon California.

(Ex. 300, pp. B.2-19 – B.2-20.)

Intervenor Center for Biological Diversity published the Potential Solar Energy Study Areas map (9/09/09) that highlighted potential Solar Energy Study Areas on private lands immediately adjacent to the Department of Energy and BLM identified Solar Energy Study Areas on public lands. A portion of the North of Desert Center Alternative is located within this area. Land east of the North of Desert Center Alternative was not included in the alternative because it encompasses the area included in the proposed Desert Center race track, the Chuckwalla Valley Raceway.

Local agencies were contacted in the Blythe region and a representative of the Palo Verde Irrigation District Real Estate Division stated that land in Eastern Riverside County had been used for growing jojoba in the past but was no longer being actively farmed. This included portions of land north of Desert Center.

The North of Desert Center Alternative site is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and

approximately 1.6 miles north of I-10. The North of Desert Center Alternative Figure is located on approximately 5,900 acres of land. However, only approximately 3,900 acres would be required for the alternative and the facility would require grading of approximately 3,000 acres. The North of Desert Center Alternative is comprised largely of private properties but also includes approximately 2,000 acres of BLM land and some County of Riverside land. Of the 6,000 acres of land shown in **Alternative Figure 4**, approximately 500 acres in the northeastern corner would be avoided to reduce impacts to the desert wash separating the southern and northern portions of the site. Additionally, approximately 320 acres in the southeastern corner would be avoided because it is active agriculture land. Sufficient contiguous land is available for a 500 MW solar thermal project within the North of Desert Center Alternative. As more land is available than would be required by the alternative, additional sensitive resources such as residences would be avoided. The alternative would be located just east of the Chuckwalla Valley Raceway, a 400-acre racing facility located at the Desert Center Airport.

This land would be within the Colorado Desert with appropriate slope and solarity requirements.

(Ex. 300, pp. B.2-21 – B.2-22.)

The North of Desert Center Alternative site would be made up of approximately 151 unique parcels with 40 land owners. The Final Phase 2a Report published by the Renewable Energy Transmission Initiative (RETI) and updated in September 2009 identified private land areas for solar development only if there were no more than 20 owners in a 2-square-mile (1,280-acre) area. The majority of the North of Desert Center parcels have supported agricultural operations in the past, and some are currently in agricultural production; however, these parcels would be avoided when designing the project.

Staff prepared a thorough description of the potential impacts of a project built at the North of Desert Center Alternative site. (*See* Ex. 300, pp. B.2-21 - B.2-49.)

ALTERNATIVES - FIGURE 4
Palen Solar Power Project - North of Desert Center Alternative

We have found above that either Reconfigured Alternatives # 2 or #3 would reduce all direct impacts, except visual resources impacts, to below the level of significance, and would contribute to cumulatively considerable impacts in the areas of land use and cultural and visual resources. Construction of the North of Desert Center Alternative would result in the permanent conversion of approximately 3,000 acres of land previously used for agriculture to renewable energy production. The construction and operation of the solar power plant would eliminate foreseeable future agricultural use on this site. Furthermore, this site is located west of the Desert Lily Preserve ACEC, south of the Joshua Tree National Park, and north of the Chuckwalla Mountains Wilderness. The Desert Lily Preserve is a 2,031-acre ACEC designated for its botanical value. A solar project at the North of Desert Center Alternative site would have an indirect impact on recreational users at the Desert Lily Preserve ACEC, Joshua Tree National Park, and Chuckwalla Mountains Wilderness due to the changes to the landscape in the immediate area, construction and operational noise, and overall change to the desert setting. (Ex. 300, p. B.2-44.)

The North of Desert Center Alternative site would have similar visual impacts as the proposed PSPP site. Both the proposed project and alternative configurations on the proposed site would be located next to some agricultural lands and some existing infrastructure, specifically highways and transmission lines. Additionally, these sites would be located near BLM open space, and north of a BLM wilderness area. (Ex. 300, p. B.2-45.)

The North of Desert Center Alternative transmission line would create a similar visual impact as the PSPP proposed site transmission interconnection because of the near proximity of the transmission lines and the need to cross the I-10 to reach the substation. Both transmission lines would be adjacent to an existing 161-kV line and would be in a remote area with minimal viewers. (*Id*.)

The North of Desert Center Alternative is made up of approximately 151 parcels with 40 land owners. Due to the number of parcels that would have to be acquired, this alternative would make obtaining site control more challenging in comparison to obtaining a right-of-way grant for use of BLM administered land at the PSPP site. (Ex. 300, p. B.2-49.)

We therefore find that the North of Desert Center Alternative site is not preferable to Reconfigured Alternatives # 2 and #3. It has similar impacts, fails to meet at least one important project objective, and is less feasible due to the numerous private parcels involved.

g. Alternatives Considered but not Evaluated in Detail

This section considers potential alternatives to the proposed PSPP that were evaluated, and determined to not be feasible or result in lesser impacts than the proposed action. Because these alternatives would not avoid or substantially reduce the adverse impacts of the proposed PSPP or because they do not meet project objectives, the purpose and need for the project, or are otherwise not reasonable alternatives, they are not analyzed in further detail in this Decision. The following alternative sites were considered:

- Cibola Alternative
- Palen Pass Alternative
- Desert Center Alternative
- Palo Verde Alternative

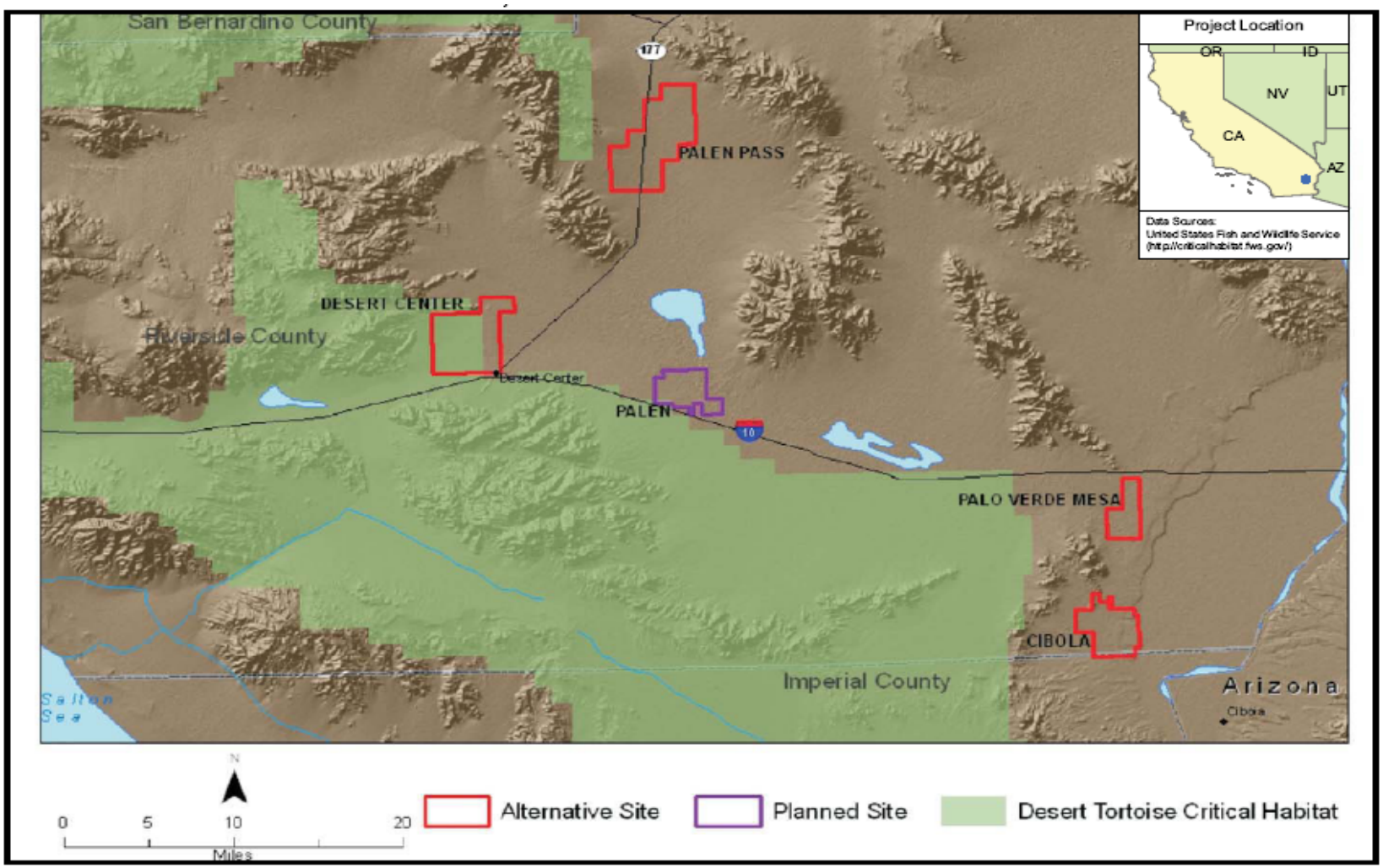
Cibola Alternative

The Cibola Alternative was identified by the Applicant in the AFC as a potential alternative site for the proposed project. The Cibola Alternative is located on private land owned by the Metropolitan Water District of Southern California and public land managed by the BLM. The private land is located west of the Palo Verde Hodges Drain, on undisturbed land. I t is located south of Blythe, Riverside County; see **Alternatives Figure 5**. The elevation of the Cibola Alternative is between approximately 300 and 500 feet above sea level. The alternative site is made up of 29 parcels with two separate land owners. Approximately 6,700 acres were identified by the Applicant for this alternative site; however, it is assumed that approximately 4,000 acres of land would be required for the alternative.

Cibola was not pursued by the Applicant as a possible site for the proposed project because it had a lower-voltage transmission line crossing the site from north to south and was privately owned. Additionally, the site was crossed by several large washes and had excessive slope, between 2 to 4 percent.

ALTERNATIVES - FIGURE 5

Palen Solar Power Project - Alternatives Considered but not Evaluated in Further Detail



The project would require grading of approximately 2,800 acres and it is expected that because of the extensive grading, the alternative site would result in impacts to biological and cultural resources. While the project would be on private land, this land has not been previously disturbed and includes three large desert washes running east west throughout the site.

Both the proposed PSPP and Cibola sites would have a large footprint and require extensive grading, potentially resulting in erosion and runoff. Additionally because the Cibola site has a greater slope than the PSPP site, it is expected that a greater amount of earth movement would be required. The Cibola site is crossed by three large desert washes, potentially increasing the sediment flow in and around the site. Given the size of the power plants and the approximately 30-ft tall solar trough structures, visual impacts would be considerable and similar to those at the proposed Palen solar site. The Cibola site would be visible from the Mule Mountains to the west.

Although the Cibola site is located on undisturbed private land and is located on approximately 29 parcels but with only two landowners, this alternative would not reduce impacts of the proposed PSPP without creating severe impacts of its own, therefore, the Cibola Alternative was eliminated from further consideration.

(Ex. 300, pp. B.2-50 – B.2-51.)

Palen Pass Alternative

The Palen Pass Alternative was identified by the Applicant in the AFC as a potential alternative site for the proposed project. The Palen Pass Alternative is located on BLM land north of Desert Center, adjacent to Highway 177, in Riverside County; see **Alternatives Figure 5.** The elevation of Palen Pass Alternative is between approximately 500 and 700 feet above sea level. The site is located east of the Joshua Tree National Park. The Joshua Tree National Park comprises nearly 800,000 acres, is used for hiking, mountain biking, rock climbing, and includes nine campgrounds.

In August of 2008, the BLM indicated that the Palen Pass region was in an area that would potentially be subsumed in expansions of the Joshua Tree National Park and/or the McCoy Wilderness. In the fall of 2008, the BLM rejected the application for ROW grant for the use of the Palen Pass region. We therefore find that the Palen Pass Alternative is not eligible for further consideration in this alternatives analysis.

(Ex. 300, p. B.2-51.)

Desert Center Alternative

The Desert Center Alternative was identified by the Applicant in the AFC as a potential alternative site for the proposed project. The Desert Center Alternative is located primarily on federal land managed by the BLM, and is located west of the town of Desert Center in eastern Riverside County; see **Alternatives Figure 5**. The elevation of Desert Center Alternative is between approximately 800 to 1,000 feet above sea level. The site is made up of 103 parcels and is owned by 53 separate landowners including the BLM. The site would be located on 10,900 acres. The Applicant submitted a right-of-way grant application to the BLM for use of the Desert Center Alternative in July 2008. In August 2008, the BLM indicated that this alternative was largely within a Desert Wildlife Management Area (DWMA).

Desert Center Alternative was not pursued by the Applicant as a possible site for the proposed project because it was partially located in the Chuckwalla DWMA, which is managed as an Area of Critical Environmental Concern for recovery of the desert tortoise, as designated by the BLM Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). The BLM established the Chuckwalla DWMA to protect federally listed desert tortoise and 38 special status plant and animal species and included the specific feature of a 1 percent surface disturbance limitation on federal lands within DWMAs. The U.S. Fish and Wildlife Service designated the area as Critical Habitat for the desert tortoise and BLM designated it as an Area of Critical Environmental Concern.

In addition, the site is located on private and public land with approximately 53 owners. Due to the number of parcels that would have to be acquired to accommodate a 500 MW alternative on this site, this alternative would make obtaining site control more challenging (in comparison to obtaining a right-of-way grant to use BLM land). The potentially more severe impacts, particularly for biological resources, of this site result in it being eliminated from further consideration in this Decision.

(Ex. 300, pp. B.2-51 – B.2-52.)

Palo Verde Alternative

The Palo Verde Alternative was identified by the Applicant in the AFC as a potential alternative site for the proposed project. The Palo Verde Alternative is located on public and private land west of Blythe, in Riverside County; see **Alternatives Figure 5**. The elevation of Palo Verde Alternative is between approximately 300 to 500 feet above sea level. The Applicant stated that the total acreage for the Palo Verde Alternative is 3,800 acres. The Palo Verde

Alternative site is made up of 12 parcels and is owned by eight separate landowners including the BLM. In July 2008, the Applicant applied for a right-of-way grant for the Palo Verde Alternative. In the fall of 2008, the BLM rejected the Palo Verde Alternative.

As with the proposed PSPP site, the Palo Verde Alternative would require use of approximately 3,000 acres and would result in the permanent loss of desert habitat. The project would require grading of approximately 2,800 acres and it is expected that due to the extensive grading requirement, building the PSPP at the alternative site would likely result in impacts to biological and cultural resources.

Impacts to land use and recreation at the Palo Verde Alternative would potentially be significant as it is located adjacent to the Mule Mountain ACEC and would require use of some agriculture lands in the Palo Verde Valley region. Because it is immediately south of several rural residences, impacts to public health, noise, and visual resources would potentially be worse than the proposed site.

The Palo Verde Alternative site is crossed by ephemeral waters and washes that would likely be rerouted. As stated above, the Palo Verde Alternative site is south of several residences and would likely be visible from these residences. Given the size of the power plants and the approximately 30-ft tall solar trough structures, visual impacts would be considerable and similar to those at the proposed PSPP site.

This alternative would not reduce impacts of the proposed PSPP without creating significant impacts of its own. Therefore, the Palo Verde Alternative was eliminated from further consideration in this Decision.
(Ex. 300, pp. B.2-52 – B.2-53.)

h. Other Generation Technology Alternatives

Solar Alternatives

Several alternative solar thermal technologies were also evaluated, including Stirling engine systems, solar power towers, linear Fresnel facilities, and utility-scale and distributed generation photovoltaic (PV) systems. The record contains an exhaustive analysis and discussion of these alternative technologies, which we briefly summarize here. (Ex. 300, pp. B.2-53 - B.2-65.) While all of these technologies are considered potentially feasible and would meet most or all of the project objectives, none would eliminate significant impacts identified for the PSPP. Specifically, the Stirling engine system and solar power tower options

would require larger surface areas than the proposed project, with associated greater impact potential. The linear Fresnel system has the potential to result in fewer impacts than the PSPP due to more compact configuration, although the technology is proprietary and not currently available to other developers. Based on these and other factors, the described alternative solar thermal technologies were eliminated from further consideration.

CBD offered testimony from Bill Powers favoring a distributed generation solar photovoltaic (PV) alternative. (Ex. 600; 10/27/10 RT 130:11 – 131:2, 160:2 – 164:13.) 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 residential, commercial, or industrial building rooftops or in other disturbed areas such as parking lots, or disturbed areas adjacent to existing structures such as substations. To be a viable alternative to the proposed PSPP, there would have to be sufficient newly-installed panels to generate 500 MW of capacity.

Mr. Powers' testimony argues that rooftop solar PV is making rapid gains toward becoming a viable source of large-scale solar generation. However, the examples in his testimony are relatively small scale projects. (Ex. 600, p. 6.) According to Staff, California currently has over 540 MW of distributed solar PV systems which cover over 40 million square feet. During 2008, 158 MW of distributed solar PV was installed in California, doubling the amount installed in 2007 (78 MW), and with 78 MW installed through May 2009, installation data suggests that at least the same amount of MW could be installed in 2009 as in 2008.

Rooftop PV systems and parking lot systems exist in small areas throughout California. Larger distributed solar PV installations are becoming more common. Examples of the different distributed PV systems are:

- Nellis Air Force Base (AFB, Nevada): Over 72,000 solar panels, generating 14 MW of energy, were constructed in 2007, by SunPower Corp. on 140 acres of Nellis AFB land (Whitney 2007). Energy generated is used at the Nellis AFB.
- Southern California Edison (Fontana, CA): SCE has installed over 3 MW of distributed solar energy in two phases on over 1 million square-foot of commercial roof space using thin film PV technology provided by First Solar. This is the beginning of a planned installation of 3.5 million PV panels that would generate 250 MW of capacity (SCE 2009).
- San Diego Gas & Electric (San Diego, CA): SDG&E's Solar Energy Project is designed to install up to 25 to 30 MW of solar PV, which would

include PV installation on parking structures and tracking systems on open land (SDG&E 2010).

- Pacific Gas & Electric (San Francisco, CA): PG&E launched a five-year program to develop 500 MW of solar PV power. The program would consist of 250 MW of utility-owned PV generation and an additional 250 MW to be built and operated by independent developers under a streamlined regulatory process. PG&E's program targets mid-sized projects, between 1 to 20 MWs, mounted on the ground or rooftops within its service area. It was approved by the CPUC in April 2010 (PG&E 2010).
- City of San Jose (San Jose, CA): The City of San Jose is considering the development and implementation of 50 MW of renewable solar energy on city facilities and/or land (San Jose 2009). San Jose's Green Vision lays out a goal of achieving 100 percent of the city's electricity from renewable energy by 2020 and plans to implement strategies of a 24-month period to increase solar installations in San Jose by 15 percent. The City anticipates that City facilities with appropriate solar access including parking lots, garages, lands and landfills would be eligible for solar installation and San Jose received ARRA funding for the project.

(Ex. 300, pp. B.2-61 – B.2-62.)

Like utility-scale PV systems, the acreage of rooftops or other infrastructure required per MW of electricity produced is wide ranging. As stated above, California has approximately 40 million square feet (approximately 920 acres) of distributed solar PV accounting for 441 MW installed. However, based on SCE's use of 600,000 square feet for 2 MW of energy, 150 million square feet (approximately 3,500 acres) would be required for 500 MW. (Ex. 300, p. B.2-62.)

Riverside County is estimated to have the technical potential for over 3,000 MW of distributed solar PV. However, distributed solar PV could be located throughout the State. The location of the distributed solar PV would impact the capacity factor of the distributed solar PV. The capacity factor depends on a number of factors including the insolation of the site. Because a distributed solar PV alternative would be located throughout the State, the insolation at some of these locations would be less than in the Mojave Desert. The Renewable Energy Transmission Initiative (RETI) assumed a capacity factor of approximately 30 percent for solar thermal technologies and tracking solar PV and approximately 20 percent capacity factor for rooftop solar PV which is assumed to be non-tracking, for viable solar generation project locations. Tracking distributed solar PV would have a higher capacity factor as well. (*Id*.)

The 2009 IEPR makes a number of recommendations to support the integration of distributed generation into the California grid, expand feed-in tariffs, and

support the efforts to achieve the RPS goals as a whole. It also recommends supporting new renewable facilities and the necessary transmission corridors and lines to access the facilities.

Challenges to an accelerated implementation of distributed solar PV include:

- **RETI Consideration of Subsidies, Tariffs, Cost, and Manufacturing.** The RETI Discussion Draft Paper *California's Renewable Energy Goals – Assessing the Need for Additional Transmission Facilities* published with the RETI Final Phase 2A Report (September 2009), addresses the likelihood of a scenario of sufficient distributed solar PV to remove the need for utility scale renewable development. This discussion paper identified the factors likely to influence the pace of large scale deployment of distributed solar PV: subsidies, feed-in tariffs, manufacturing and installation cost, and manufacturing scale-up.
- **Cost.** The 2009 IEPR states that solar PV technology has shown dramatic cost reductions since 2007, and is expected to show the most improvement of all the technologies evaluated in the 2009 IEPR model, bringing its capital cost within range of that of natural gas–fired combined cycle units. However, the CPUC *33% Renewables Portfolio Standard Implementation Analysis Preliminary Results* considered a number of cases to achieve a 33 percent RPS standard. The results of this study state that the cost of a high distributed generation case is significantly higher than the other 33 percent RPS alternative cases. The study explains that this is due to the heavy reliance on distributed solar PV resources which are more expensive than wind and central station solar.
- **Tariffs.** Additionally, the IEPR discusses the need to adjust feed-in tariffs to keep downward pressure on costs. Feed-in tariffs should be developed based on the size and type of renewable resources, given that the cost of generating energy from a 100-MW wind farm is less than the cost of generating to ensure a good mix of new renewable energy projects. According to the report, differentiating feed-in tariffs by type and size can ensure a good mix of new renewable energy projects and avoid paying too much for some technologies and too little for others.
- **Limited Installations**. Examples of large scale distributed solar projects are still limited. In the spring of 2008, SCE proposed 250 to 500 MW of rooftop solar PV to be installed in 5 years. As of January 2010, SCE had installed only 3 MW. As the 2009 IEPR points out, the potential for distributed resources remains largely untapped and integrating large amounts of distributed renewable generation on distribution systems throughout the State presents challenges.
- **Electric Distribution System**. The State's electric distribution systems are not designed to easily accommodate large quantities of randomly installed distributed generation resources at customer sites.

> Accomplishing this objective efficiently and cost-effectively will require the development of a new transparent distribution planning framework.

(Ex. 300, p. B.2-63.)

Mr. Powers, in his testimony, extensively cites Energy Commission publications which support the use of rooftop PV. (Ex. 600.) These publications document our commitment to support and encourage all efforts to increase renewable generation in this state. Commission policy favors implementation of solar energy in any form. However, in arguing for PV as an *alternative* to the PSPP, Mr. Powers runs afoul of our goals and policies, because he appears to contend that rooftop PV should be used *instead of* PSPP. Fulfillment of State energy goals will require the use of utility-scale solar generation, whether thermal or PV, *and* local distributed generation, such as rooftop PV. In other words, we need projects like PSPP and we need maximization of the use of rooftop solar and every other feasible form of renewable energy. While it will very likely be possible to achieve 500 MW of distributed solar energy over the coming years, the very limited numbers of existing facilities make it difficult to conclude with confidence that it could happen within the timeframe required for the PSPP.

Non-Solar Alternatives

Non-solar renewable generation technologies were considered as potential alternatives to the proposed project. The following renewable generation technologies were considered in this analysis:

- *Wind Energy*
- *Geothermal Energy*
- *Biomass Energy*
- *Tidal Energy*
- *Wave Energy*

The non-solar renewable technologies alternatives (wind, geothermal, biomass, tidal, wave) would either be infeasible at the scale of the PSPP, or would not eliminate significant impacts caused by the project without creating significant impacts in other locations. Specifically, wind energy that would be viable at some locations in Riverside County could create significant impacts to biological, visual, cultural, and water and soils resources.

- *Wind Energy*

Wind turbines currently being manufactured have power ratings ranging from 250 watts to 5 MW, and units larger than 7 MW in capacity are now under development. The technology is well developed and can be used to generate significant amounts of power. There are now approximately 2,490 MW of wind being generated in California. (Ex. 300, pp. B.2-65 – B.2-66.)

The San Gorgonio Pass, northwest of Palm Springs, is considered one of the best regions in California for producing wind energy. However, there is little undeveloped land remaining for expansion beyond the already existing wind farms. Because there is minimal expansion room, the wind industry is instead replacing the older turbines in the region with newer ones. At one time, there were more than 4,000 turbines in the Pass but wind farm operators have been replacing smaller, less efficient machines with larger, more modern turbines that need less maintenance and that can harness more power.

Approximately 2,500 to 8,500 acres of land would be required for a 500 MW wind electricity power plant, although this land would not be densely developed. While wind plants would not necessarily impact the same types of wildlife and vegetation as the PSPP plant, the significant acreage necessary for a 500 MW wind plant would still cause significant habitat loss in addition to potentially significant impacts from habitat fragmentation and bird and bat mortality. Wind turbines are often over 400 feet high for 2-MW turbines. As such, any wind energy project would be highly visible.

While wind electricity generation is a viable and important renewable technology in California, it would not reduce the visual impacts associated with the PSPP. Additionally, it would not meet the project objective to construct a solar energy project taking advantage of a zone of high insolation. Therefore, wind generation was eliminated from further consideration at the proposed site.

- *Geothermal Energy*

Geothermal technologies use steam or high-temperature water obtained from naturally occurring geothermal reservoirs to drive steam turbine/generators. Geothermal plants account for approximately 5 percent of California's power and range in size from under 1 MW to 200 MW. California is the largest geothermal power producer in the United States, with about 1,800 MW installed capacity. Geothermal plants provide highly reliable base load power, with capacity factors from 90 to 98 percent.

Geothermal plants must be built near geothermal reservoir sites because steam and hot water cannot be transported long distances without substantial thermal energy loss.

Approximately 5-10 average-sized geothermal projects would be required to achieve 500 MW of geothermal energy. The amount of land required for a geothermal facility varies greatly. Five hundred MW of geothermal energy could require the use of many thousands of acres of land. However, the amount of ground disturbance on that area would be less than 10 percent. Additionally, while components of 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.

Concerns regarding geothermal power plants include air quality, hazardous materials, and geology. Benefits from geothermal power plants include an increased reliability and less ground disturbance than some renewable resources, including solar.

Geothermal generation is a commercially available technology and is important for California's renewable energy future because it provides base load power that is available 24 hours a day. It also can be developed with substantially less ground disturbance than that needed for the PSPP, so impacts related to biological and cultural resources, water and soils resources, and traffic/transportation would be reduced. Generation of 500 MW of geothermal power at times of peak demand (to equate to the proposed solar project), would require development of several large geothermal facilities. Despite the encouragement provided by Renewable Portfolio Standard targets and ARRA funding, few new projects have been proposed in the past two years, and no geothermal projects are included on the Renewable Energy Action Team's list of projects requesting ARRA funds. Therefore, while the technology is feasible and additional development is both expected and needed in furtherance of our goal of encouraging development of all forms of renewable energy, it would not meet the objective to allow permitting in 2010. Additionally, it would not meet the project objective to construct a solar energy project taking advantage of a zone of high insolation.

(Ex. 300, pp. B.2-67 – B.2-69.)

- *Biomass Energy*

Electricity can be generated 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. Several techniques are used to convert these fuels to electricity, including direct combustion, gasification, and anaerobic fermentation. Biomass facilities do not require the extensive amount of land required by the other renewable energy sources discussed, but they generate much smaller amounts of electricity.

Currently, nearly 19 percent of the state's renewable electricity derives from biomass and waste-to-energy sources.

Generally, small amounts of land are required for biomass power facilities; however, a biomass facility should be sited near a relatively large source of biomass in order to minimize the cost of bringing the biomass waste to the facility.

The emissions due to biomass fuel-fired power plant operation are generally unavoidable. Direct impacts of criteria pollutants could cause or contribute to a violation of the ambient air quality standards. Significant impacts can potentially occur for PM10 and ozone because emissions of particulate matter and precursors and ozone precursors would contribute to existing violations of the PM10 and ozone standards. Biomass/biogas facility emissions could also adversely affect visibility and vegetation in federal Class I areas or state wilderness areas, which would significantly deteriorate air quality related values in the wilderness areas. Toxic air contaminants from routine operation would also cause health risks that could locally adversely affect sensitive receptors.

Most biomass facilities produce only small amounts of electricity (in the range of 3 to 10 MW) and so could not meet project objectives. Biomass facilities also generate significant air emissions and require numerous truck deliveries to supply the plant with the waste. Also, 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.

(Ex. 300, pp. B.2-70 – B.2-71.)

- *Tidal Energy*

Certain coastal regions experience higher tides than others. This is a result of the amplification of tides caused by local geographical features such as bays and inlets. In order to produce practical amounts of power, a difference between high

and low tides of at least 5 meters is required. There are about 40 sites around the world with this magnitude of tidal range. The higher the tides, the more electricity can be generated from a given site and the lower the cost of electricity produced.

Tidal technologies, especially tidal fences, have the potential to cause significant biological impacts, especially to marine species and habitats. Fish could be caught in the unit's fins by the sudden drop in pressure near the unit. The passageways, more than 15 feet high and probably sitting on the bay floor, could squeeze out marine life that lives there or alter the tidal flow, sediment build-up, and the ecosystem in general. Even the in-flow turbines can have environmental impacts on marine systems. The in-flow turbines off New York City underwent environmental monitoring for 18 months to ensure the turbines would not create environmental impacts to the river's marine wildlife. The results thus far show no observed evidence of increased fish mortality or injury

In-flow tidal turbines are a relatively new technology and are not considered an alternative to the PSPP project because they are an unproven technology at the scale that would be required to replace the proposed project. Additionally, the environmental impacts of tidal turbines are still under review.

(Ex. 300, pp. B.2-71 – B.2-73.)

- *Wave Energy*

The total power of waves breaking on the world's coastlines is estimated at 2 to 3 million megawatts. In favorable locations, wave energy density can average 65 MW per mile of coastline. The environmental impacts of wave power have yet to be fully analyzed. A recent study published by the U.S. Department of Commerce and National Oceanic and Atmospheric Administration listed a number of potentially significant environmental impacts created by wave power:

- Significant reduction to waves with possible effects to beaches (e.g., changes to sediment transport processes).
- The use of buoys may have positive effects on forage fish species, which in turn could attract larger predators. Structures need to reduce potential entanglement of larger predators, especially marine turtle species.
- Modifications to water circulation and currents may result in changes to larval distribution and sediment transport.
- Wave energy development may affect community structures for fish and fisheries.

- Lighting and above-water structures may result in marine bird attraction and collisions and may alter food webs and beach processes.
- A diversity of concerns would arise regarding marine mammals including entanglement issues.
- Energy-absorbing structures may affect numerous receptors and should avoid sensitive habitats.
- Chemicals used in the process must be addressed both for spills and for a continuous release such as in fouling paints.
- New hard structures and lighting may break loose and increase debris accumulation.
- Impacts on fish and marine mammals caused by noise coming from the buoys should be understood and mitigated.
- Electromagnetic effects may affect feeding or orientation and should be better understood.
- Impact thresholds need to be established. As projects scale up in location or implementation, new risks may become evident.

Wave technology is not considered an alternative to the PSPP because is an unproven technology at the scale that would be required to replace the proposed project and because it may also result in substantial adverse environmental impacts.

As noted above in the discussion on distributed PV, the Commission has concluded that a diverse mix of large scale and distributed renewable energy resources will be needed to meet California's RPS and greenhouse gas reduction goals and policies. Each type of commercially available renewable resource is expected to make a positive contribution, and the Commission will continue supporting research for the emerging technologies.

(Ex. 300, pp. B.2-73 – B.2-75.)

Alternative Methods of Generating or Conserving Electricity

Nonrenewable generation technologies that require use of natural gas, coal, or nuclear energy would not achieve the key project objective for PSPP: to construct and operate an environmentally friendly, economically sound, and operationally reliable solar power generation facility that would contribute approximately 1,000,000 megawatt hours (MWh) of clean, renewable solar energy per year to the State of California's renewable energy goals.

While these generation technologies would not achieve this key objective, they are presented here in brief for the benefit of the public and decision makers. Conservation and demand-side management is also briefly addressed in this section.

Natural Gas Generation: Natural gas power generation accounts for approximately 22 percent of all the energy used in the United States and comprises 40 percent of the power generated in California. A gas-fired power plant generating 500 MW would generally require less than 80 acres of land. Natural gas power plants may result in numerous environmental impacts; of greatest concern is emission of air pollutants and greenhouse gases.

Although natural gas generation is clearly a viable technology, it is not a renewable technology, so it would not attain the objective of generating renewable power meeting California's renewable energy needs.

Coal Generation: In 2006, California enacted SB 1368 which prohibits utilities from making long-term commitments for electricity generated from plants that create more carbon dioxide (CO_2) than clean-burning natural gas plants. Although coal generation is a viable technology, it is not a renewable technology, so it would not attain the objective of generating renewable power meeting California's renewable energy needs.

Nuclear Energy: California law currently prohibits the construction of any new nuclear power plants in California. However, it has been more than 25 years since the last comprehensive Energy Commission assessment of nuclear power issues. The *Nuclear Power in California: 2007 Status Report* was published in October of 2007, and gives a detailed description of the current nuclear waste issues and their implications for California. This was prepared as part of the development of the Energy Commission's *2007 Integrated Energy Policy Report*. New nuclear facilities may not currently be permitted in California, so this technology is infeasible at present.

Conservation and Demand-Side Management

Conservation and demand-side management consist of a variety of approaches to reduction of electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. In 2005, the Energy Commission and CPUC's Energy Action Plan II declared cost effective energy efficiency as the resource of first choice for meeting California's energy needs. The Energy Commission noted that energy efficiency helped

flatten the state's per capita electricity use and saved consumers more than $56 billion since 1978.

The CPUC, with support from the Governor's Office, the Energy Commission, and the California Air Resources Board, among others, adopted the California Long-Term Energy Efficiency Strategy Plan for 2009 to 2020 in September 2008. The plan is a framework for all sectors in California including industry, agriculture, large and small businesses, and households. Major goals of the plan include:

- All new residential construction will be zero net energy by 2020;
- All new commercial construction will be zero net energy by 2030;
- Heating, ventilation, and air conditioning industries will be re-shaped to deliver maximum performance systems;
- Eligible low-income customers will be able to participate in the Low Income Energy Efficiency program and will be provided with cost-effective energy efficiency measures in their residences by 2020.

However, with population growth and increasing demand for energy, conservation and demand-management alone is not sufficient to address all of California's energy needs and will not itself provide the renewable energy required to meet the California renewable energy goals.

(Ex. 300, pp. B.2-75 – B.2-79.)

RESPONSE TO COMMENTS

In its comments on the PMPD submitted November 29, 2010, intervenor CBD asserts that our approval of both Reconfigured Alternatives #2 and #3 constitutes an impermissible ceding of discretionary authority to the applicant. CBD does not explain, however, the basis for its assertion as it applies in this case, nor was it able to do so when queried at the December 2, 2010 Committee Conference. The two approved reconfigured alternatives are within the same site footprint and both have been determined to have similar impacts. They are not different projects. Our authorization of either configuration does nothing more than provide the applicant a degree of flexibility which may or may not be useful, depending upon the outcome of its negotiations with the owners of the small parcels of private land involved.

CBD's other comments on alternatives are restatements of assertions made in its testimony and addressed in this Decision.

FINDINGS OF FACT

Based on the evidence, including that presented on each subject area described in other portions of this Decision, we find and conclude as follows:

1. The record contains an adequate review and analysis of a reasonable range of site location and generation alternatives to the project as proposed.
2. Reconfigured Alternatives #2 and #3 are superior alternatives to the proposed project in terms of feasibly meeting the project objectives and reducing significant potential environmental impacts.
3. The Applicant has requested that we approve Reconfigured Alternatives #2 and #3.
4. None of the other site location alternatives to the project offer a superior alternative as analyzed under both NEPA and CEQA.
5. The alternative technologies analyzed by Staff and referenced in this decision could not achieve all of the project objectives.
6. Rooftop solar PV facilities would require extensive acreage although it would minimize the need for undisturbed or vacant land. However, increased deployment of rooftop solar PV at this time, faces challenges in manufacturing capacity, cost, and timeliness. Implementation of PV, whether on a utility scale or as local distributed generation, should complement, rather than substitute for, projects such as PSPP.
7. Other generation technologies (wind, geothermal, biomass, tidal, wave, natural gas, and nuclear) were also examined as possible alternatives to the proposed project. These technologies would either be infeasible at the scale of the proposed project, would not eliminate substantial adverse impacts caused by the proposed project without creating their own substantial adverse impacts in other locations, or would not meet the project objective to construct a solar energy project taking advantage of a zone of high insolation.
8. Conservation and demand side management programs would likely not meet the state’s growing electricity needs that could be served by the proposed project. In addition, these programs would not provide the renewable energy required to meet the California Renewable Portfolio Standard (RPS) requirements.
9. Meeting the state's and Southern California Edison’s obligations to develop renewable energy will require contributions from all of the commercially available renewable technologies analyzed by Staff, such that these technologies are best viewed as complementary strategies rather than as competing alternatives.

10. The evidence contains an adequate review and analysis of alternative generation technology.
11. The evidence contains an adequate review and analysis of the “No Project/No Action” alternative.
12. The “No Project/No Action” alternative is not a reasonable alternative or feasible alternative to the PSPP.

CONCLUSIONS OF LAW

1. The record contains a sufficient analysis of Alternatives and complies with the requirements of the California Environmental Quality Act, the Warren-Alquist Act, and the National Environmental Policy Act.

2. The evidentiary record contains an adequate review of alternative generation technology, including that of rooftop photovoltaic distributed generation.

3. The record contains an acceptable analysis of a reasonable range of site location and generation alternatives to the project as proposed.

CONDITION OF CERTIFICATION

ALT-1. The Palen Solar Power Project shall be designed, constructed and operated in accord with either of the alternatives referred to as the Reconfigured Alternative #2 or the Reconfigured Alternative #3.

III. COMPLIANCE AND CLOSURE

Public Resources Code section 25532 requires the Commission to establish a post-certification monitoring system. The purpose of this requirement is to assure that certified facilities are constructed and operated in compliance with applicable laws, ordinances, regulations, standards, as well as the specific Conditions of Certification adopted as part of this Decision.

SUMMARY OF THE EVIDENCE

The record contains a full explanation of the purposes and intent of the Compliance Plan (Plan). The Plan is the administrative mechanism used to ensure that the Palen Solar Power Project (PSPP or Palen Solar) is constructed and operated according to the Conditions of Certification. It essentially describes the respective duties and expectations of the Project Owner and the Staff Compliance Project Manager (CPM) in implementing the design, construction, and operation criteria set forth in this Decision.

Compliance with the Conditions of Certification contained in this Decision is verified through mechanisms such as periodic reports and site visits. The Plan also contains requirements governing the planned closure, as well as the unexpected temporary and unexpected permanent closure, of the Project.

The Compliance Plan is composed of two broad elements. The first element establishes the "General Conditions," which:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- set forth procedures for settling disputes and making post-certification changes;
- set forth the requirements for periodic compliance reports and other administrative procedures necessary to verify the compliance status of all Commission imposed Conditions; and
- set forth requirements for facility closure.

The second general element of the Plan contains the specific "Conditions of Certification." These are found following the summary and discussion of each individual topic area in this Decision. The individual Conditions contain the measures required to mitigate potentially adverse Project impacts associated with construction, operation, and closure to levels of insignificance. Each Condition also includes a verification provision describing the method of assuring that the Condition has been satisfied.

The contents of the Compliance Plan are intended to be implemented in conjunction with any additional requirements contained in the individual Conditions of Certification.

FINDINGS OF FACT

The record establishes:

1. Requirements contained in the Compliance Plan and in the specific Conditions of Certification are intended to be implemented in conjunction with one another.

2. We adopt the following Compliance Plan as part of this Decision.

CONCLUSIONS OF LAW

1. The compliance and monitoring provisions incorporated as a part of this Decision satisfy the requirements of Public Resources Code section 25532.

2. The Compliance Plan and the specific Conditions of Certification contained in this Decision assure that the Palen Solar Power Project will be designed, constructed, operated, and closed in conformity with applicable law.

GENERAL CONDITIONS OF CERTIFICATION

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Site mobilization is limited preconstruction activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of site mobilization. Walking, driving or parking a passenger vehicle, pickup truck and/or light vehicles is allowable during site mobilization.

CONSTRUCTION

Onsite work to install permanent equipment or structures for any facility.

Ground Disturbance

Construction-related ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

Grading, Boring, and Trenching

Construction-related grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

Notwithstanding the definitions of ground disturbance, grading, boring, and trenching above, construction does **not** include the following:

1. the installation of environmental monitoring equipment;
2. a soil or geological investigation;
3. a topographical survey;
4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and
5. any work to provide access to the site for any of the purposes specified in “Construction” 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, “commercial operation” begins after the completion of start-up and commissioning, when the power plant has reached

reliable steady-state production of electricity at the rated capacity. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The Compliance Project Manager (CPM) shall oversee the compliance monitoring and is responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of this Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description (petition to amend), and ownership or operational control (petition for change of ownership) (See instructions for filing petitions);
4. documenting and tracking compliance filings; and
5. ensuring that compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies, Energy Commission, and Staff when handling disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, the approval will involve all appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (PDF or MS Word files).

The CPM may accept and approve compliance submittals that provide sufficient detail to allow construction activities to commence without the submittal containing detailed information on construction activities that will be commenced later in time.

CHIEF BUILDING OFFICIAL RESPONSIBILITIES

The Chief Building Official (CBO) shall serve as the Energy Commission's delegate to assure the project is designed and constructed in accordance with the Energy Commission's Decision including Conditions of Certification, California Building Standards Code, local building codes and applicable laws, ordinances, regulations and standards to ensure health and safety. The CBO is typically made-up of a team of specialists covering civil, structural, mechanical and electrical disciplines whose duties include the following:

1. Performing design review and plan checks of all drawings, specifications and procedures;

2. Conducting construction inspection;
3. Functioning as the Energy Commission's delegate including reporting noncompliance issues or violations to the CPM for action and taking any action allowed under the California Code of Regulations, including issuing a Stop Work Order, to ensure compliance;
4. Exercising access as needed to all project owner construction records, construction and inspection procedures, test equipment and test results; and
5. Providing weekly reports on the status of construction to the CPM.

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings is to assemble both the Energy Commission's and project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's Conditions of Certification. This is to confirm that all applicable conditions of certification have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain the following documents and information as a public record, in either the Energy Commission's Compliance file or Dockets file, for the life of the project (or other period as required):

- All documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
- All monthly and annual compliance reports filed by the project owner;
- All complaints of noncompliance filed with the Energy Commission; and
- All petitions/requests for project or condition of certification changes and the resulting Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance Conditions of Certification and all other Conditions of Certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, conditions of certification, or ownership. Failure to comply with any of the conditions of certification or the

compliance conditions may result in reopening of the case and revocation of Energy Commission certification; an administrative fine; or other action as appropriate. A summary of the Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section of the Decision.

COMPLIANCE MITIGATION MEASURES/CONDITIONS OF CERTIFICATION

UNRESTRICTED ACCESS (COMPLIANCE-1)

The CPM, responsible Energy Commission staff, and delegated agencies or consultants shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on-site for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

COMPLIANCE RECORD (COMPLIANCE-2)

The project owner shall maintain project files on-site or at an alternative site approved by the CPM for the life of the project, unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-built” drawings, documents submitted as verification for conditions, and other project-related documents.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

COMPLIANCE VERIFICATION SUBMITTALS (COMPLIANCE-3)

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the Conditions, may be modified as necessary by the CPM.

Verification of compliance with the conditions of certification can be accomplished by the following:

1. monthly and/or annual compliance reports, filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, as required by the specific conditions of certification;
2. appropriate letters from delegate agencies verifying compliance;
3. Energy Commission staff audits of project records; and/or
4. Energy Commission staff inspections of work, or other evidence that the requirements are satisfied.

Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the project by AFC number, the appropriate condition(s) of certification by condition number(s), and a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and Energy Commission submittal number.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All hardcopy submittals shall be addressed as follows:

Dale Rundquist
Compliance Project Manager
(09-AFC-7C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.

PRE-CONSTRUCTION MATRIX AND TASKS PRIOR TO START OF CONSTRUCTION (COMPLIANCE-4)

Prior to commencing construction, a compliance matrix addressing <u>only</u> those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times for

submittal of compliance verification documents to the CPM for Conditions of Certification are established to allow sufficient Staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification. Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon the Commission Decision.

Compliance Reporting

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

COMPLIANCE MATRIX (COMPLIANCE-5)

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all conditions of certification in a spreadsheet format. The compliance matrix must identify:

1. the technical area;
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable;

7. the compliance status of each condition, e.g., “not started,” “in progress” or “completed” (include the date); and
8. if the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

MONTHLY COMPLIANCE REPORT (COMPLIANCE-6)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the **Key Events List** found at the end of this section of the Decision**.**

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic searchable version of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix showing the status of all conditions of certification;
4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;
5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings submitted to, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. a listing of the month’s additions to the on-site compliance file; and
10. a listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers or as acceptable by the CPM.

ANNUAL COMPLIANCE REPORT (COMPLIANCE-7)

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project, unless otherwise specified by the CPM. Each Annual Compliance Report shall include the AFC number, identify the reporting period, and shall contain the following:

1. an updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter with the condition it satisfies, and submitted as attachments to the Annual Compliance Report;
4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings submitted to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file;
9. an evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date (see Compliance Conditions for Facility Closure addressed later in this section); and
10. a listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters.

CONFIDENTIAL INFORMATION (COMPLIANCE-8)

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Executive Director with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept

confidential as provided for in Title 20, California Code of Regulations, section 2501, et. seq.

REPORTING OF COMPLAINTS, NOTICES, AND CITATIONS (COMPLIANCE-9)

Prior to the start of construction, the project owner must send a letter to property owners living within 1 mile of the project notifying them of a telephone number to contact project representatives with questions, complaints, or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with a date and time stamp recording. All recorded complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at:

http://www.energy.ca.gov/sitingcases/power_plants_contacts.html.

Any changes to the telephone number shall be submitted immediately to the CPM, who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** Conditions of Certification. All other complaints shall be recorded on the complaint form (Attachment A).

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations, and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure, and unplanned permanent closure**.**

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency. Short-term is defined as cessation of construction activities or operations of a power plant for a period less than six-months long. Cessation of construction of operations for a period longer than six months in considered a permanent closure.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

PLANNED CLOSURE (COMPLIANCE-10)

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to the commencement of closure activities. The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;
2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or if the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities until the Energy Commission approves the facility closure plan.

UNPLANNED TEMPORARY CLOSURE/ON-SITE CONTINGENCY PLAN (COMPLIANCE-11)

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific Conditions Of Certification for the technical areas of **Hazardous Materials Management** and **Waste Management.**)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

UNPLANNED PERMANENT CLOSURE/ON-SITE CONTINGENCY PLAN (COMPLIANCE-12)

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

POST CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION: AMENDMENTS, OWNERSHIP CHANGES, STAFF APPROVED PROJECT MODIFICATIONS AND VERIFICATION CHANGES (COMPLIANCE-13)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. **It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769.** Implementation of a project modification without first securing Energy Commission, or Energy Commission staff approval, may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for **amendments** and for **Staff approved project modifications** as specified below. Both shall be filed as a “Petition to Amend.” Staff will determine if the change is significant or insignificant. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the CPM, who will file it with the Energy Commission’s Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this

condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

AMENDMENT

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769(a), when proposing modifications to the project (including linear facilities) design, operation, or performance requirements. If a proposed modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide a sample petition to use as a template.

CHANGE OF OWNERSHIP

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide a sample petition to use as a template.

STAFF APPROVED PROJECT MODIFICATION

Modifications that do not result in deletions or changes to conditions of certification, that are compliant with laws, ordinances, regulations and standards and will not have significant environmental impacts may be authorized by the CPM as a Staff approved project modification pursuant to section 1769(a) (2). Once Staff files an intention to approve the proposed project modifications, any person may file an objection to Staff's determination within 14 days of service on the grounds that the modification does not meet the criteria of section 1769 (a)(2). If a person objects to Staff's determination, the petition must be processed as a formal amendment to the decision and must be approved by the full commission at a noticed business meeting or hearing.

VERIFICATION CHANGE

A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an

independent third party contractor or the local building official. Energy Commission staff retains CBO authority when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional, and local agencies that have an interest in environmental protection when conducting project monitoring.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider.

ENERGY COMMISSION NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1237, but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by future law or regulations.

Informal Dispute Resolution Process

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The process encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be brought before the full Energy Commission for consideration via the complaint and investigation procedure.

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for an informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including corrective measures proposed or undertaken.

Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures proposed or undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;
3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner;
4. After the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If an agreement has not been reached, the CPM

shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230, et. seq.

Formal Dispute Resolution Procedure – Complaints and Investigations

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources noncompliance with a Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

COMPLIANCE TABLE 1
SUMMARY of COMPLIANCE CONDITIONS OF CERTIFICATION

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COMPLIANCE-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: • property owners living within 1 mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, • a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, • all pre-construction conditions have been complied with, • the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Compliance Matrix	A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report
COMPLIANCE-6	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.
COMPLIANCE-7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COMPLIANCE-8	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Executive Director with a request for confidentiality.

COMPLIANCE TABLE 1

SUMMARY of COMPLIANCE CONDITIONS OF CERTIFICATION

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-9	Reporting of Complaints, Notices, and Citations	Prior to the start of construction, the project owner must send a letter to property owners living within 1 mile of the project notifying them of a telephone number to contact project representatives with questions, complaints, or concerns
COMPLIANCE-10	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-11	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-12	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-13	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

ATTACHMENT 1
COMPLAINT REPORT / RESOLUTION FORM

Complaint Log Number:_____ Docket Number:_____

Project Name:_____

COMPLAINANT INFORMATION

Name:_____ Phone Number:_____

Address:_____

COMPLAINT

DATE COMPLAINT RECEIVED:_____ TIME COMPLAINT RECEIVED:_____

COMPLAINT RECEIVED BY: ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE:_____

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION):_____

_____

_____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL:_____

_____

_____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS:_____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION:_____

_____

_____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN:_____

_____

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED:_____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

OTHER RELEVANT INFORMATION:_____

_____

_____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE:_____ DATE:(ATTACH ADDITIONAL PAGES AND ALL SUPPORTING DOCUMENTATION, AS REQUIRED)

IV. ENGINEERING ASSESSMENT

The broad engineering assessment of the Palen Solar Power Project (PSPP) consists of separate analyses that examine its facility design, engineering, efficiency, and reliability aspects. These analyses include the on-site power generating equipment and the project-related linear facilities.

A. FACILITY DESIGN

This review covers several technical disciplines including the civil, electrical, mechanical, and structural engineering elements related to project design and construction. It addresses consistency with applicable LORS, which consistency will suffice to avoid the creation of impacts under the California Environmental Quality Act. (Ex. 300, p. D.1-5.) The evidentiary presentations were uncontested. (Exs. 1, § 2.5, App. C; 57; 300, § D.1.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Application for Certification (AFC) describes the preliminary facility design. In considering the adequacy of the plans, the Commission reviews whether the power plant and related facilities are described with sufficient detail to assure the project can be designed and constructed in accordance with applicable engineering laws, ordinances, regulations, and standards (LORS). The review also includes, as appropriate, the identification of special design features that are necessary to deal with unique site conditions which could impact public health and safety or the operational reliability of the project. (Ex. 300, p. D.1-1.)

Staff considered potential geological hazards and reviewed the preliminary project design with respect to grading, flood protection, erosion control, site drainage, and site access in addition to the criteria for designing and constructing related linear facilities such as the transmission interconnection facilities. (Ex. 300, p. D.1-2; see also, the **Geology and Paleontology** section of this Decision.) The evidence establishes that the project will incorporate accepted industry standards. This includes design practices and construction methods for preparing and developing the site. Conditions **CIVIL-1** through **CIVIL-4** ensure that these activities will be conducted in compliance with applicable LORS.

Major structures, systems, and equipment include project components necessary for power production, those costly or time consuming to repair or replace, facilities used for storage of hazardous or toxic materials, and those capable of

becoming potential health and safety hazards if not constructed properly. (Ex. 300, p. D.1-3.) These components are mentioned in Condition **GEN-2**. The master drawing and master specifications lists described in Condition **GEN-2** refer to documents based on the project's *detailed* design and may include supplemental materials for structures and equipment not currently identified as part of the project's current *preliminary* design. (*Id*.) Conditions **GEN-3** through **GEN-8** require that qualified individuals oversee and inspect facility construction. (Ex. 300, p. D.1-4.) Similarly, Conditions **MECH-1** through **MECH-3** address compliance of the project's mechanical systems with appropriate standards, and a quality assurance/quality control program provides that the project will be designed, procured, fabricated, and installed as described. (Ex. 300, p. D.1-3.) Condition **ELEC-1** mandates that design and construction of major electrical features comply with applicable LORS.

The project will be designed and constructed in conformance with the latest edition of the California Building Standards Code (currently the 2007 CBSC) and other applicable codes and standards in effect at the time design approval and construction actually begin. (*Id*.) Condition of Certification **GEN-1** incorporates this requirement. The 2007 CBSC requires specific "dynamic" lateral force procedures for certain structures to determine their seismic design criteria; others may be designed using a "static" analysis procedure. To ensure that project structures are analyzed appropriately, Condition **STRUC-1** requires the project owner to submit its proposed lateral force procedures to the Chief Building Official[1] (CBO) for review and approval prior to the start of construction. (*Id*.)

The evidentiary record also addresses project closure, which may range from "mothballing" the facility to removing all equipment and restoring the site. To ensure that decommissioning of the facility will conform to applicable LORS and be completed in a manner that protects the environment and public health and safety, the project owner is required to submit a decommissioning plan which will identify: decommissioning activities; applicable LORS in effect when decommissioning occurs; activities necessary to restore the site, if appropriate; and decommissioning alternatives. (Ex. 300, p. D.1-5.) The general closure

[1] The Energy Commission is the CBO for facilities we certify. We may delegate CBO authority to local building officials and/or independent consultants to carry out design review and construction inspections. When CBO duties are delegated, we require a Memorandum of Understanding with the delegate entity to outline respective roles, responsibilities, and qualifications of involved individuals such as those described in Conditions of Certification **GEN-1** through **GEN-8**. The Conditions further require that every appropriate element of project construction be first approved by the CBO and that qualified personnel perform or oversee inspections. (Ex. 300, p. D.1-4.)

provisions of the Compliance Monitoring and Closure Plan describe related requirements (see the **Compliance and Closure** section in this Decision).

Overall, the evidentiary record shows that the Conditions of Certification establish a design review and construction inspection process which verifies compliance with applicable standards and special requirements. (Ex. 300, pp. D.1-4, D.1-20.) Moreover, the same Conditions will apply even were the Reconfigured or Reduced Acreage Alternatives certified. (Ex. 300, pp. D.1-1, D.1-5.) We therefore conclude that the project will be designed and constructed in compliance with all applicable LORS, and that these activities will not negatively impact public health and safety.

FINDINGS OF FACT

Based on the evidence of record, the Commission makes the following findings:

1. The Palen Solar Power Project is currently in the preliminary design stage.
2. The evidence summarized in this topic area addresses consistency with applicable LORS, and does not extend to an evaluation of the project's environmental impacts.
3. The facility, including the identified alternatives, can be designed and constructed in conformity with the applicable laws, ordinances, regulations, and standards (LORS) set forth in the appropriate portion of **Appendix A** of this Decision.
4. The Conditions of Certification set forth below provide, in part, that qualified personnel will perform design review, plan checking, and field inspections of the project.
5. The Conditions of Certification set forth below are necessary to ensure that the project is designed and constructed in accordance with applicable law and in a manner that protects public health and safety.
6. The **General Conditions,** included in the **Compliance and Closure** section of this Decision, establish requirements to be followed in the event of facility closure.

CONCLUSION OF LAW

1. We therefore conclude that implementation of the Conditions of Certification listed below ensure that the Palen Solar Power Project will be designed and constructed in conformance with the applicable LORS pertinent to the engineering aspects summarized in this section of the Decision.

CONDITIONS OF CERTIFICATION

GEN-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, maintenance, or closure of the completed facility. All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the Conditions of Certification in the **Transmission System Engineering** section of this Decision.

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 the performance of any construction, addition, alteration, moving, demolition, repair, or maintenance on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM shall then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the date of each submittal to the CBO. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the master drawings, and master specifications list of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in Condition of Certification **GEN-2**. Major structures and equipment may be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections based upon a reasonable fee schedule negotiated between the project owner and the CBO in accordance with the 2007 CBC. These fees may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California- registered architect, or a structural or civil engineer, as the resident engineer (RE) in charge of the project. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the Conditions of Certification in the **Transmission System Engineering** section of this Decision.

The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers

may be delegated responsibility for mechanical and electrical portions of the project, respectively. A project may be divided into parts, provided that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The RE shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these Conditions of Certification, approved plans, and specifications;
3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the Conditions of the project;
4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The resident engineer (or his delegate) must be located at the project site, or be available at the project site within a reasonable period of time, during any hours in which construction takes place.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval the resume and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approvals.

If the RE or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California-registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California-registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the Conditions of Certification in the **Transmission System Engineering** section of this Decision.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California-registered electrical engineer.

The project owner shall submit to the CBO, for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;
2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work,

civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading; site preparation; excavation; compaction; construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and

3. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;
2. Prepare the foundation investigations, geotechnical, or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load;
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2007 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and
4. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations.

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and
2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2007 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with engineering LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

F. The electrical engineer shall:
1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approvals.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, including prefabricated assemblies, the project owner shall assign to the project qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2007 CBC. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in Conditions of Certification in the **Transmission System Engineering** section of this Decision.

A certified weld inspector, certified by the American Welding Society (AWS) and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks, and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Inspect the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction then, if uncorrected, to the CBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, CBO, and CPM stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or project owner and CBO approved alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s) or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this Condition of Certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next

monthly compliance report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain the CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request that the CBO inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at another accessible location during the operating life of the project. Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report; (a) a written notice that the completed work is ready for final inspection; and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner, at its own expense, shall provide to the CBO three sets of electronic copies of the above documents. These shall be provided in the form of "read only" (Adobe .pdf 6.0) files, with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 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.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area.

Verification: The project owner shall notify the CPM, within 24 hours, when earthwork and construction are stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2007 CBC. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR) and the proposed corrective action for review and approval. Within five days of resolution of the NCR the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs for the reporting month shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or project owner and CBO approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans and that the facilities are adequate for their intended purposes, along with a copy of the transmittal letter to the CPM. The project

owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction of any major structure or component referred to in Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO for design review and approval the proposed lateral force procedures for project structures and the applicable designs, plans, and drawings for project structures. Proposed lateral force procedures, designs, plans, and drawings shall be those for the following items:

1. Major project structures;
2. Major foundations, equipment supports, and anchorage; and
3. Large field-fabricated tanks.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications;
3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation;
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer; and
5. Submit to the CBO the responsible design engineer’s signed statement that the final design plans conform to applicable LORS.

Verification: At least 60 days (or project owner and CBO approved alternative time frame) prior to the start of any increment of construction of any

structure or component referred to in Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO the final design plans, specifications, and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2007 CBC.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the Condition(s) of Certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval and the revised corrective action necessary to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2007 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2007 CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or project owner and CBO approved alternate time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.

MECH-1 The project owner shall submit for CBO design review and approval the proposed final design, specifications, and calculations for each plant major piping and plumbing system referred to in Condition of Certification **GEN-2**, above. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);

- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- Riverside County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency.

Verification: At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of any increment of major piping or plumbing construction referred to in Condition of Certification **GEN-2,** above, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and the California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of that installation.

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code or other applicable code. Vendor certification, with identification of the applicable code, shall be submitted for prefabricated vessels and tanks; and
2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the

appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval the above-listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications, and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with the applicable LORS.

Verification: At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 480 Volts or higher (see a representative list, below), with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the

installation to ensure compliance with the requirements of applicable LORS. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in Conditions of Certification in the **Transmission System Engineering** section of this Decision.

A. Final plant design plans shall include:

1. one-line diagrams for the 13.8-kV, 4.16-kV, and 480 V systems; and
2. system grounding drawings.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers, and protective relay settings for the 13.8-kV, 4.16-kV, and 480 V systems;
6. system grounding requirements; and
7. lighting energy calculations.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;
2. Testing or energization of major electrical equipment; and
3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

Verification: At least 30 days (or project owner and CBO approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

B. POWER PLANT EFFICIENCY

Pursuant to the California Environmental Quality Act (CEQA), the Commission must determine whether the consumption of fossil fuel (a non-renewable form of energy) will result in substantial impacts upon energy resources. [Cal. Code Regs., tit. 14 § 15126.4(a)(1), App. F.] However, Palen Solar Power Project (PSPP or Palen Solar) would use solar energy to generate all of its capacity. Fossil fuel, in the form of propane, would be used only to maintain steam seals, assist with startups, and keep the temperature of the heat transfer fluid above its relatively high freezing point. The project would decrease reliance on fossil fuel, and would increase reliance on renewable energy resources. The undisputed evidence establishes that the project would not create significant adverse effects on fossil fuel energy supplies or resources, would not require additional sources of energy supply, and would not consume fossil fuel energy in a wasteful of inefficient manner. In addition, if constructed and operated as proposed, Palen Solar would occupy approximately six acres per MW of power output, a figure considerably less than that of some other solar power technologies. (Ex. 300, pp. D.3-5.)

The evidence examines the efficiency of the Palen Solar Project design, compares project efficiency to that of other solar projects, and examines whether the project will incorporate measures that prevent or reduce wasteful, inefficient, or unnecessary energy consumption. The evidence also examines a number of technology and of land use alternatives to the project. There are no LORS that establish solar power plant efficiency criteria. (Exs. 1, § 2.5.3; 300, § D.3.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Palen Solar Project is a solar thermal power plant producing a total of 500 MW (nominal net output) and employing the concentrated parabolic trough solar thermal technology in Riverside County, CA. The project would consist of arrays of parabolic mirrors, solar steam generator heat exchangers, two steam turbine generators, and a dry cooling system using air-cooled condensers. (Ex. 300, p. D.3-1.)

The project's power cycle would be based on a steam cycle (also known as the Rankine cycle). (Ex. 1, § 2.4.1.) The solar steam generator heat exchangers would receive heat transfer fluid from the solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. The heat transfer fluid would be used to generate steam in the heat exchangers. This steam would then expand through the steam turbine generator to produce electrical power.

The Applicant estimates an average overall steam cycle efficiency of 35 percent for the proposed project. (Ex. 1, Figure 2-7.) Because there are currently no legal or industry standards for measuring the efficiency of solar thermal power plants, we compare the steam cycle efficiency of PSPP to the average efficiency of the typical modern steam turbines currently available in the market. The efficiency figures for these turbines range from 35 percent to 40 percent. The Applicant's expected project thermal efficiency of 35 percent is consistent with this industry figure. (Ex. 300, p. D.3-4.)

1. Fossil Fuel Use – Impacts

Solar thermal power plants typically consume much less fossil fuel (usually in the form of natural gas) than other types of thermal power plants. Therefore, common measures of power plant efficiency used by the Commission to analyze gas-fired power plants are less meaningful when applied to a solar project. There are currently no legal or industry standards for measuring the efficiency of solar thermal power plants.

Palen Solar would consume insignificant amounts of fossil fuel for power generation. It would consume fossil fuel only to reduce startup time and to keep the temperature of the heat transfer fluid above its relatively high freezing point. The project would burn propane gas at a nominal rate of approximately 100,000 Million British thermal units (MMBtus) per year (Ex. 1.). Propane is normally created as a by-product of petroleum refining and from natural gas production. Petroleum products and natural gas represent considerable energy resources in California. Propane supplies in California amount to approximately 630 million gallons per year from refineries alone. This is only about 60 percent of California's total propane supply. Compared to this figure, the 1.13 million gallons (100,000 MMBtu) per year needed for PSPP is not significant. (Ex. 1.) Furthermore, the evidence establishes that, compared to a typical fossil fuel-fired power plant of equal capacity, the project's rate of using propane is not significant. (Ex. 300, p. D.3-3.) Therefore, it appears highly unlikely that the project would create a substantial increase in fossil fuel demand. (Ex. 300, p. D. 3-4.)

2. Solar Land Use Impacts

However, solar power plants do occupy vast tracts of land, so the focus for analyzing the efficiency of these types of facilities must shift from fuel efficiency to land use efficiency. To analyze the land use efficiency of a solar facility,

Commission staff analyzed the Palen Solar Project to determine its overall solar efficiency[1]. The greater the project's solar efficiency, the less land the plant must occupy to produce a given power output. (Ex. 300, p. D.3-2.)

The extent of the project's land use impacts is likely in direct proportion to the number of acres affected. For this reason, the analysis contained in the evidence evaluated the land use efficiency of the project and expressed the results in terms of power produced, or MW per acre. The Palen Solar Power Project was also compared to the MW per acre of other solar projects currently under review by the Commission. These projects' power and energy output, and the extent of the land occupied by them, are summarized in **Efficiency Table 1**, below. The land use efficiency for a typical fossil fuel-fired combined cycle power plant (e.g. Avenal Energy, natural gas-fired) is shown only for comparison. (Ex. 300, p. D.3-6.)

According to the analysis contained in evidence submitted by Staff, Palen Solar will produce power at the rate of 500 MW net, and will generate energy at the rate of 1,000,000 MW-hours net per year, while occupying approximately 2,970 acres. (Exs. 1, § 2.3, Figure 2-4; 300, p. D.3-6.)

Staff analysis calculations for the Palen Solar project establish the following:

> **Power-based efficiency**: 500 MW ÷ 2,970 acres = **0.17 MW/acre** or 6.0 **acres/MW**

Staff calculates energy-based land use efficiency thus:

> **Energy-based efficiency**: 1,000,000 MWh/year ÷ 2,970 acres =**337 MWh/acre-year**

As seen in **Efficiency Table 1**, PSPP, employing the linear parabolic trough technology, is slightly less efficient in use of land than the Beacon Solar Energy Project, which uses the same technology. PSPP is more efficient in use of land than the Ivanpah SEGS Project, which employs BrightSource power tower technology, the Calico Solar Project, and the Imperial Valley Solar Project.

[1] It appears that methods for determining the efficiency of a solar power plant have yet to be standardized. (Ex. 300, p. D.3-5.)

Efficiency Table 1
Solar Land Use Efficiency[1]

Project	Generating Capacity (MW net)	Annual Energy Production (MWh net)	Annual Fuel Consumption (MMBtu LHV)	Footprint (Acres)	Land Use Efficiency (Power-Based) (MW/acre)	Land Use Efficiency (Energy – Based) (MWh/acre-year)	
						Total	Solar Only[1]
Palen Solar (09-AFC-6)	**500**	**1,000,000**	**103,919**	**2,970**	**.17**	**337**	**332**
Beacon Solar (08-AFC-2)	250	600,000	36,000	1,240	0.20	484	480
Ivanpah SEGS (07-AFC-5)	400	960,000	432,432	3,744	0.11	256	238
Imperial Valley Solar (08-AFC-5)	750	1,620,000	0	6,500	0.12	249	249
Calico Solar (08-AFC-13)	850	1,840,000	0	8,200	0.11	224	224
Avenal Energy (08-AFC-1)[2]	600	3,023,388	24,792,786	25	24.0	120,936	N/A

Notes:

1 - Net energy output is reduced by natural gas-fired combined cycle proxy energy output;

2 - Example natural gas-fired combined cycle plant.

Source: Ex. 300, p. D.3-6.

3. Analyses of Alternatives

The record also contains analyses of several alternatives to the proposed project. For purposes of one analysis, natural gas, oil, coal, nuclear, geothermal, biomass, hydroelectric, wind and solar photovoltaic technologies were all considered. Because the Palen Solar Project would consume insignificant amounts of fossil fuel for power production, the project would not constitute a significant adverse impact on fossil fuel energy resources compared to feasible alternatives. (Ex. 300, p. D.3-5.) From a land use efficiency prospective, alternative generation technologies such as a natural gas-fired combined cycle power plant would yield much greater land use efficiency than the proposed project. However, it would not achieve the basic project objective, to generate electricity from the renewable energy of the sun. Even though evaporative dry cooling could offer greater efficiency than dry cooling which is proposed for the PSPP, the Applicant's selection of dry cooling was shown to be a reasonable tradeoff that would prevent potentially significant environmental impacts resulting from consumption of the large quantities of water required by wet cooling. (Ex. 300, p. D.3-6.)

The record includes an analysis of three different site alternatives that reconfigured the project layout.

1. The Reconfigured Alternative would be a 500 MW solar facility, like the proposed project, but it would alter the proposed solar Units 1 and 2 by changing their shapes, as illustrated in **Alternatives Figure 1**.of the RSA (Ex. 300);[2]

2. The Reconfigured Alternative #2 would be a 500 MW solar facility, like the proposed project, but it would alter the proposed solar Unit 1 by changing its shape. The solar Unit 2 would remain as proposed for the proposed project. The overall disturbance area for Reconfigured Alternative #2 would be approximately 4,365 acres. (Ex. 300, **Alternatives Figure 1B.)**

3. The Reconfigured Alternative #3 would be a 500 MW solar facility, like the proposed project, but it would alter the proposed solar Unit 1 by changing its shape, as illustrated in **Alternatives Figure 1C**. The solar Unit 2 would remain as proposed for the proposed project. The overall disturbance area for Reconfigured Alternative #3 would be approximately 4,330 acres.

[2] All Alternatives Figures can be found in the Revised Staff Assessment (Ex. 300) as unnumbered pages which follow the text of the Alternatives section.

The evidence establishes that the land use efficiency as well as fossil fuel use of these alternatives would remain the same, as both power output and occupied land would be unchanged. The CEQA Level of Significance of any of the above alternative reconfigurations would not change from the proposed project. (Ex. 300, pp. D.3-8 to D.3-10.)

Several no project alternatives were examined in the record. While these would eliminate land-use impacts of the project, they would eliminate the project's ability to reduce reliance on fossil fuels and increase renewable energy resources. None of the examined alternatives were shown to be superior overall to the proposed Palen Solar Project. The evidence establishes that from an energy efficiency prospective, given the project objectives, location, air pollution control requirements, and the commercial availability of various alternative technologies, the selected solar thermal technology is a feasible selection. This is evaluated further in the **Alternatives** section of this Decision. (See Ex. 200, p. 7-19 to 7-2.)

The record also contains a cumulative impacts analysis, which found that there are no nearby power plant projects or other projects consuming large amounts of fossil fuel that hold the potential for cumulative energy consumption impacts when aggregated with the project. (Ex. 300, p. D.3-11.) Efficiency has also been examined from the comparative land use perspective. Although numerous large solar power projects have been proposed in the eastern Riverside County desert region, this project's land use efficiency is relatively good when compared to other solar projects. Therefore, the project will not result in a cumulative efficiency impact.

FINDINGS OF FACT

Based on the uncontroverted evidence, we make the following findings and reach the following conclusions:

1. The Palen Solar Power Project will provide approximately 500 MW of electrical power, using solar energy to generate most of its capacity and natural gas auxiliary boilers to maintain steam seals, reduce startup time, and to keep the temperature of the heat transfer fluid above its freezing point.

2. The Palen Solar Power Project is expected to experience an average steam cycle efficiency of 35 percent, based on the applicant's estimates, which is comparable to the 35 to 40 percent steam efficiency for modern steam turbines.

3. The project will burn propane at a nominal rate of approximately 100,000 Million British thermal units (MMBtus) per year.

4. The amount of the project's annual power production from fossil fuel is insignificant.

5. Compared to the project's expected overall production rate and compared to a typical fossil fuel fired power plant of equal capacity, the amount of the annual power production from fossil fuel is insignificant.

6. The impact of the project's fuel consumption on energy supplies and energy efficiency is less than significant.

7. The evidence contains a comparative analysis of alternative fuel sources and generation technologies, none of which is superior to the proposed project at meeting project objectives in an efficient manner.

8. The project will decrease reliance on fossil fuel and will increase reliance on renewable energy resources. Consequently, the project would help in reducing California's dependence on fossil fuel-fired power plants.

9. The most significant environmental impacts caused by solar power plants result from occupying large expanses of land.

10. The evidentiary record contains an analysis of the project's land use impacts compared to energy output, and analyses of alternative solar technologies and heat rejection systems.

11. The project will occupy approximately 6.0 acres per MW of power output, a figure lower than many other solar power technologies.

12. Greater land use efficiency would be achieved by building and operating a natural gas-fired combined cycle power plant rather than the proposed solar project. However, such an alternative would not achieve the basic project objective of generating electricity from the renewable energy of the sun.

13. The evidentiary record contains analyses of alternatives to the Palen Solar Project's generating technologies, cooling technologies, to its project configuration layout, to its acreage size, as well as several No Project alternatives.

14. While the PSPP would have greater land use impacts than a fossil-fired alternative project, the PSPP would occupy nearly one third less land than that of some other solar power technologies.

15. Even though evaporative, or wet cooling could offer greater efficiency than the Palen Solar Power Project, the Applicant's selection of dry cooling is a reasonable tradeoff that will prevent potentially significant environmental impacts resulting from consumption of the large quantities of water required by wet cooling.

16. The evidence establishes that the CEQA Level of Significance of any of the alternative project reconfigurations would not change the level of significance from the proposed project.

17. None of the examined No Project alternatives were shown to be superior overall to the proposed Palen Solar project.

18. None of the examined alternatives would achieve project objectives while also reducing or eliminative significant, unmitigated environmental impacts.

19. Even though evaporative dry cooling could offer greater efficiency than dry cooling which is proposed for the PSPP, the Applicant's selection of dry cooling was shown to be a reasonable tradeoff that would prevent potentially significant environmental impacts resulting from consumption of the large quantities of water required by wet cooling.

20. No nearby power plant projects or other projects consuming large amounts of fossil fuel hold the potential for cumulative energy consumption impacts when aggregated with the project.

21. The project will not contribute to cumulative land use efficiency impacts, since on a comparative basis, it will occupy less land per megawatt than some other proposed solar projects with different technologies.

22. No Federal, State, or local laws, ordinances, regulations, or standards apply to the efficiency of this project.

CONCLUSIONS OF LAW

1. The Palen Solar Project will not create significant adverse direct, indirect or cumulative effects upon energy supplies or resources, require additional sources of energy supply, or consume energy in a wasteful or inefficient manner.

2. No Conditions of Certification are required for this topic area.

C. POWER PLANT RELIABILITY

In order to ensure safe and reliable operation of the Palen Solar Energy Project (Palen Solar) we must determine whether the project will be designed, sited and built in accordance with typical industry norms for reliable power generation. We apply these norms as a benchmark to ensure that the resulting project would not be likely to degrade the overall reliability of the electric system to which it is attached. [Pub. Res. Code, § 25520(b); Cal. Code Regs., tit. 20, § 1752(c)(2).] Furthermore, we are concerned that if, for any reason, a project proves to be unreliable and does not operate, then the Commission would have allowed the disturbance of large blocks of land and the environment with no related public benefit. There are, however, no LORS that establish either power plant reliability criteria or procedures for attaining reliable operation.

The "availability factor" of a power plant is the percentage of time it is available to generate power; both planned and unplanned outages subtract from this availability. Measures of power plant reliability are based upon two factors: (1) the plant's actual ability to generate power when it is considered to be available and, (2) failures at start-up and unplanned (or forced) outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is can provide power when called upon to operate. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability requires adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. This section examines these factors for the project, however, as of these writing, industry norms that could be used for comparison purposes have not been developed for solar thermal power plants. (Ex. 300, p. D.4-2.)

The responsibility for maintaining electrical system reliability falls largely to control area operators such as the California Independent System Operator (CAISO) that purchase, dispatch, and sell electric power throughout the state. (Ex. 300, p. D.4-1.) Protocols to ensure sufficient electrical system reliability have been established. For example, "must run" power purchase agreements and "participating generator" agreements are two mechanisms that contribute to an adequate supply of reliable power. (Ex. 300, p. D.4-2.)

The California Public Utilities Commission consults with CAISO to establish resource adequacy requirements for all load-serving entities (basically, publicly

and privately owned utility companies). These requirements include maintaining a minimum reserve margin (extra generating capacity to serve in times of equipment failure or unexpected demand) and maintaining sufficient local generating resources to satisfy the load-serving entity's peak demand and operating reserve requirements. The CAISO has begun to establish specific criteria for each load-serving entity under its jurisdiction. These criteria guide each load-serving entity in deciding how much generating capacity and ancillary services to build or purchase, after which the load-serving entity issues power purchase agreements to satisfy these needs. (*Id*.)

According to the evidence summarized below, these criteria have been developed on the assumption that individual power plants in the current competitive market will continue to exhibit historical reliability levels. However, it is possible that, if numerous power plants operated at reliability levels sufficiently lower than historical levels, this assumption would prove invalid. Therefore, to ensure adequate system reliability, we examine whether individual power plants will be built and operated to the traditional level of reliability reflected in the power generation industry. We take this approach because, where a power plant compares favorably to industry norms, it is not likely to degrade the overall reliability of the electric system it serves. (Ex. 300, pp. D.4-2 - D.4-10.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Applicant intends that the Palen Solar Power Project provide dependable renewable power to the electricity grid, generally during the hours of peak power consumption such as hot summer afternoons. It expects an annual availability factor of approximately 97 percent for the project. The project is anticipated to operate at an annual capacity factor of approximately 26 percent. (Ex. 300, p. D.4-3.) For practical purposes, a reliable power plant is one that is available when called upon to operate. The evidence shows that delivering acceptable reliability entails: 1) adequate levels of equipment availability; 2) plant maintainability with scheduled maintenance outages; 3) fuel and water availability; and 4) resistance to natural hazards. (Ex. 300, p. D.4-2.)

The record, summarized below, reflects Commission staff's evaluation of the proposed project against typical industry norms as a benchmark for assessing plant reliability.

1. Equipment Availability

Equipment availability will be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction, and operation of the plant and by providing adequate maintenance and repair of the equipment and systems. The project owner will use a QA/QC program typical in the power industry. Equipment will be purchased from qualified suppliers and the project owner will perform receipt inspections, test components, and administer independent testing contracts. To ensure these measures are taken, we have incorporated appropriate Conditions of Certification in the **Facility Design** section of this Decision. (Ex. 300, p. D.4-3.)

2. Plant Maintainability

The Palen Solar Project will operate only when the sun is shining. Repairs or maintenance can thus occur at night. Moreover, redundant pieces of the equipment most likely to require service or repair will be provided in order to allow repairs when the plant is operating, if needed. Specifically, the project would consist of two separate units operating in parallel trains, which provides inherent reliability. (Ex. 300, p. D.4-3.) A single equipment failure cannot disable more than one train. The project owner will establish a maintenance program based on recommendations from the various equipment manufacturers. This will encompass both preventive and predictive maintenance techniques. Maintenance outages will likely be planned for night time of periods of low electricity demand. The evidence establishes that these measures will ensure acceptable reliability. (Ex. 300, p. D.4-4.)

3. Fuel and Water Availability

For any power plant the long-term availability of fuel, and water for cooling or process use, is necessary to ensure reliability. The Palen Solar project will use small amounts of propane to reduce start-up time and keep the temperature of the heat transfer fluid above its freezing point. The evidence establishes that adequate supplies of propane are available to meet the project's needs. (Ex. 300, p. D.4-4.)

The Applicant has proposed using well water for domestic and industrial water needs, including steam cycle makeup, mirror washing, service water and fire protection water. The project would be dry cooled, so no water would be required for power plant cooling. The quantities of water to be consumed by the

project are relatively small compared to the capacity of the resource available. (Ex. 300, p. D.4-4.)

4. Natural Hazards

The site lies within Seismic Zone 4; no active faults are present within the project boundaries or within a 2.5 mile radius of the site[1]. (Ex. 1, Appendix C.) The project will be designed and constructed to standards of the latest appropriate LORS. By implementing these seismic design criteria, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. We have adopted Conditions of Certification in the **Facility Design** section of this Decision to ensure this occurs. Although a portion of the site is within the 100-year or 500-year floodplain, the evidence raises no special concerns with power plant reliability due to flooding. (Exs 1, § 5.17.1.3; 300, p. D.4-5.)

High winds are common in the region of the site, presenting the potential risk of damage to the solar mirrors. However, the record shows that project features would be built to withstand wind loading, and wind fencing would be installed around the project perimeter to reduce the effects of wind[2]. Nevertheless, to protect mirrors during high winds, mirror arrays would have to be stowed in a protective position. Designs to address wind loading would be in accordance with applicable LORS, including the 2007 California Building Code (Exs. 1, §§ 2.5.6.2, 2.5.6.5; 300, p. D.4-5).

5. Comparison to Industry Norms

The North American Electric Reliability Corporation (NERC) maintains industry statistics for availability factors and other related reliability data. However, no statistics are currently available for solar power plants[3]. (Ex. 300, p. 6.4-5.) Nevertheless, the evidence establishes the likelihood that the project will reach its predicted annual availability factor of approximately 97 percent.

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[1] For a more detailed discussion, see the **Geology and Paleontology** section of this Decision.

[2] Condition of Certification **STRUCT-1** requires the submittal of plans to and approval of the local building official.

[3] NERC reports that, for the years 2002-2006, the availability factor for fossil fueled units is 86.01 percent.

6. Alternatives

The evidence contains an analysis of several alternatives to the proposed project including three reconfigured design alternatives, and several no project alternatives. None of the alternatives would likely affect the reliability analysis, although a no project alternative that did not allow another solar generation project on the site would result in an increased or continuing reliance on fossil fuel-fired generation and a loss of renewable generation resources. (Ex. 300, p. D.4-6 to D.4-8.)

Finally, the evidence shows that the Palen Solar Project will provide renewable energy on hot summer afternoons, when it is most needed. The evidence characterizes this as a "noteworthy project benefit." (Ex. 300, p. D.4-10.)

FINDINGS OF FACT

Based on the uncontested evidence, we make the following findings:

1. No federal, state, or local/county LORS apply specifically to the reliability of the Palen Solar Power Project.

2. A project's reliability is acceptable if it does not degrade the reliability of the utility system to which it is connected.

3. Because solar technology is relatively new and the technologies employed so varied among solar projects, no National American Electric Reliability Corporation (NERC) statistics are available for solar power plants.

4. Applicant's unchallenged prediction of the availability factor for Palen Solar is 97 percent.

5. Palen Solar is anticipated to operate at an annual capacity factor of approximately 26 percent.

6. Implementation of Quality Assurance/Quality Control (QA/QC) program for Palen Solar during design, procurement, construction, and operation of the plant, as well as adequate maintenance and repair of the equipment and systems, will ensure the project is adequately reliable.

7. Appropriate Conditions of Certification included in the **Facility Design** portion of this Decision ensure implementation of the QA/QC program for Palen Solar and will ensure conformance with seismic design criteria.

8. The project's propane fuel supply is reliable.

9. The evidence shows that adequate, reliable supplies of water exist and are available for the project.

10. The project will likely meet industry norms for reliability, including reliability during seismic events, and will not degrade the overall electrical system.

11. The project will incorporate an appropriate redundancy of function for its equipment.

12. The nature of solar thermal generating technology provides inherent redundancy because the series-parallel arrangement of solar collector assemblies would allow for reduced output generation if one (or possibly several) rows of solar collectors were to require service or repair.

13. The project will provide renewable energy on hot summer days, when it is most needed.

CONCLUSIONS OF LAW

1. We therefore conclude that the Palen Solar Project will meet or exceed industry norms and not degrade the overall reliability of the electrical system.

2. There are no LORS that establish either power plant reliability criteria or procedures for attaining reliable operation.

3. No Conditions of Certification are required for this topic area.

D. TRANSMISSION SYSTEM ENGINEERING

The Commission's jurisdiction includes "…any electric power line carrying electric power from a thermal power plant …to a point of junction with an interconnected transmission system." (Pub. Res. Code, § 25107.) The Commission assesses the engineering and planning design of new transmission facilities associated with a proposed project to ensure compliance with applicable law. The record indicates that the Applicant in this case accurately identified all necessary interconnection facilities.

The California Independent System Operator (CAISO) is responsible for ensuring electric system reliability for participating entities, and determines both the standards necessary to achieve system reliability and whether a proposed project conforms to those standards. The Commission works in conjunction with the CAISO in assessing a project.

Commission Staff's analysis evaluates the project transmission lines and equipment, both from the power plant up to the point of interconnection with the existing transmission network as well as upgrades beyond the interconnection that are attributable to the project. Staff relies upon the responsible interconnecting authority for analysis of impacts on the transmission grid, as well as for the identification and approval of new or modified facilities required downstream from the proposed interconnection for mitigation purposes.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Applicant has proposed to interconnect the 500 megawatt (MW) Palen Solar Power Project (PSPP) to Southern California Edison's (SCE) planned red Bluff Substation via an 8-mile long single circuit 230-kV transmission line. The project's planned operational date is summer 2013.

The PSPP would be a solar thermal project which would use a solar parabolic trough technology to generate electricity. Arrays of parabolic mirrors collect heat from the sun and heat up the fluid in the solar field piping. Through a series of heat exchangers, heat is released to generate high pressure steam. The steam is then fed to a steam turbine generator (STG) to generate electricity.

The proposed project would be a concentrated solar thermal electric generating facility with two adjacent solar plants. Each solar generating plant would use a 300 MVA steam turbine generating unit for a combined net output of 530 MW;

although, the Applicant has only applied for a 500 MW interconnection at the California ISO and in the AFC. Each generator's auxiliary load would be approximately 36 MW, resulting in a maximum net output of 265 MW at a 90 percent power factor. Each generating unit would be connected to the low side of its dedicated 18/230-kV generator step-up (GSU) transformer through 24-kV, 12,000 ampere disconnect switch and a 24-kV, 10,000 ampere circuit breaker. The step-up transformer for each steam turbine generating unit would be rated at 18/230-kV and 210/285/350 megavolt ampere (MVA) at 65-degrees centigrade. For each generating unit the 230-kV side of its step-up transformer would be connected through a 230-kV, 3,000 ampere disconnect switch and a single circuit 230-kV transmission line to the proposed Palen Central 230-kV switching station. Generating Unit 1 requires a 9,200 foot transmission line to the switching station and Generating Unit 2 requires a 4,000 foot transmission line. Each line would be connected to a common bus segment at the Palen Central switchyard. The proposed Palen switchyard would consist of a 230-kV, 2,000 amps circuit breaker, two 230-kV, 300 amps disconnect switches and protection circuits. (Ex. 300, p. D.5-5.)

Each of the two units would have its own solar field and power block. Each power block consists of a heat transfer fluid system, solar steam generator, a steam turbine generator, air-cooled condenser, and various auxiliary equipment. Each unit is expected to generate at a normal output of 250 MW.

SCE is responsible for ensuring electric system reliability on its transmission system with the addition of proposed transmission modifications, and determines both the standards necessary to ensure reliability and whether the proposed transmission modifications conform to existing standards. The California ISO's generator interconnection study process is in transition from a serial process to an interconnection window cluster study process. The PSPP was studied under the window cluster process and the transmission reliability impacts of the proposed project were examined in the Phase I and Phase II Studies. The Phase I Study is similar to the former System Impact Study except it is now performed for a group of projects in the same geographical area of a utility that apply for interconnection in the same request window. The Phase II Study (former Facilities Study) is performed after generators in each cluster meet specific milestones required to stay in the generator interconnection queue. The Phase II Study is then performed based on the number of generators left in each cluster.

The Phase I and Phase II Studies for projects in the transition cluster were conducted to determine the preferred and alternative generator interconnection methods, and to identify any mitigation measures required to ensure system conformance with utility reliability criteria, North American Electric Reliability Corporation (NERC) planning standards, Western Electricity Coordinating Council (WECC) reliability criteria, and California ISO reliability criteria. Staff relies on the studies and any review conducted by the responsible agencies to determine the effect of the projects on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards (NERC 2006, WECC 2006, California ISO 2002a, 2007a & 2009a).

The Phase II Study analyzed the grid with and without the generator or generators in the cluster under conditions specified in the planning standards and reliability criteria. The standards and criteria defined the assumptions used in the study and established the thresholds by which grid reliability was determined. The studies must analyze the impact of the projects for their proposed first year(s) of operation and thus were based on a forecast of loads, generation and transmission. Load forecasts were developed by the interconnected utility, which was SCE in this case. Generation and transmission forecasts were based on the interconnection queue. The studies focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads or cascading outages), short circuit duties and substation evaluation.

(Exs. 45; 300, p. D.5-6.)

The July 28, 2009, Transition Cluster Phase I Interconnection Study was prepared by the California ISO in coordination with SCE. Fifteen queue generation projects, including the proposed 500 MW PSPP in the Eastern Riverside County area with a total of 9,690 MW net generation output, were included in this cluster study. As of December 4, 2009 only five projects (2,200 MW) of the original 15 projects remained in the interconnection queue. Reducing the size of the cluster by 10 projects and over 7,000 MW meant the Phase 1 Study results for the cluster were not a reasonable forecast of the reliability impacts of the proposed project. (Ex. 300, p. D.5-7.)

The changes between the Transition Cluster Phase I and Phase II Studies for the Eastern Bulk System, included the withdrawal of ten generation projects totaling 7,490 MW, changing the point of interconnection of one generation project, and a reduction of 350 MW of generation from two projects. For study

purposes, five generation projects totaling a maximum output of 2,200 MW were included in the SCE Transition Cluster base cases. Three of these projects, PSPP, the Blythe Solar Power Project, and the Genesis Solar Energy Project are currently seeking licenses from the California Energy Commission.

The Phase II Group Study modeled the PSPP with a net output of 500 MW. The base case was developed from WECC's 2013 Peak load and 2013 Off-Peak load base case series and included all major SCE transmission projects, and all proposed higher queued generation projects that will be operational by 2013. The Phase II Group Study pre-project base cases were modeled to include SCE's Devers–Colorado River transmission line project (DCR), which is the California portion of SCE's 500-kV Devers–Palo Verde 2 (DPV2) project, and the proposed 500-kV switchyard at Colorado River substation. The power flow studies were conducted with and without the proposed Transition Cluster Phase II projects connected to the SCE grid at each project's interconnection switchyard. The detailed study assumptions were described in the study. The power flow study assessed the Transition Cluster Phase II projects impact on thermal loading of the transmission lines and equipments. Transient and post-transient studies were conducted using the Peak load full loop base case to determine whether the Transition Cluster Phase II projects would create instability in the system following certain selected outages. Short circuit studies were conducted to determine if the Transition Cluster Phase II projects would overstress existing substation facilities. (Ex. 300, pp. D.5-7 – D.5-8.)

1. Study Results

Phase II Study

Generally Commission staff relies on the California ISO Phase I/SIS to determine whether or not the proposed generation project will likely comply with reliability and to identify the transmission facilities required for reliable interconnection. For the Transition Cluster projects, the Phase I Interconnection Study did not provide an accurate forecast of impacts of the PSPP on the SCE transmission grid. Therefore, Staff relied on the Phase II Group Study that was completed on July 8, 2010 and received on July 23, 2010, to determine the PSPP impact on grid reliability, identify transmission upgrades for reliable interconnection, and mitigation measures to this RSA. In order to ensure compliance with reliability LORS, Condition of Certification **TSE-5** requires the executed Large Generator Interconnection Agreement prior to the start of construction of transmission facilities.

The Phase II Group Study identified pre-project overload criteria violations under 2013 Summer Peak and Off-Peak study condition. Pre-project overloads are caused by either existing system conditions or by projects with higher positions in the SCE's generator interconnection queue. The study concluded that the addition of the Phase II Transition Cluster projects would cause a number of pre-existing normal and /or emergency overloads to increase and would cause some new normal and emergency overloads. (Ex. 45.)

To reliably interconnect and deliver the power generation of the Eastern Bulk System generators, including the PSPP, the following network upgrades are required:

- Replacement and upgrade of circuit breakers at SCE's Vincent, Kramer, Windhub and Antelope substations. Circuit breaker replacement or upgrades generally occur within the fence-lines of existing facilities and do not require CEQA analysis;

- Construction and/or expansion of the Red Bluff Substation and the looping in of the Colorado River–Devers 500-kV No. 2 transmission line into the Red Bluff Substation. The environmental analysis of the Red Bluff substation and the loop in of the Colorado River–Devers 500-kV transmission line has been provided in Transmission System Engineering Appendix A. These facilities will require a full CEQA Environmental Impact Report and license from the CPUC and a NEPA Environmental Impact Statement and a right-of-way grant permit from the Bureau of Land Management;
- Expansion of SCE's proposed Colorado River Substation. Staff has analyzed the expansion of the proposed Colorado substation as part of its Supplemental Staff Assessment for the Blythe Solar Power Plant. The expansion of the proposed Colorado River Substation is required for all of the Eastern Bulk System projects and the environmental analysis is the same; hence, the environmental analysis included as Transmission System Engineering Appendix B references the Blythe Solar Power Project, but is equally applicable here;
- Replacement of the drops on SCE's Mira Loma–Vista 230-kV No. 2 transmission line at its' Vista Substation. The drops are the segment of the line that enters the substation and do not require environmental analysis;
- Development of Special Protection Schemes (SPS) which would drop generation under certain contingency conditions; and
- The SCE West of Devers 230-kV Line Upgrades project. The West of Devers project consists of the reconductoring and relocation of two 35-mile 220-kV circuits between SCE's Devers and San Bernardino substations and two 37-mile 220-kV circuits between the Devers and Vista

substations. The West of Devers project has been included in the SCE/California ISO Transmission Plan for several years because it is needed to reliably serve loads in southern California. Because the West of Devers project is a previously planned project that would be required for the SCE system to meet reliability standards even if the Eastern Bulk System generators were not operating we find this transmission upgrade should not be considered a reasonably foreseeable consequence of the PSPP.

(Ex. 300, p. D.5-11.)

2. Compliance with LORS

Condition of Certification **TSE-5** will ensure that PSPP's transmission system will comply with LORS, and requires the project owner to submit, among other things, design drawings and an interconnection agreement.

3. Alternatives

In the RSA, Staff considered whether construction and operation of the reconfigured alternatives discussed in the **Alternatives** section of this Decision would affect the transmission system differently than the proposed project. The evidence shows that, because in all cases the project's location and output would be the same, there would be no different effect. (Ex. 300, pp. D.5-11 – D.5-15.)

3. Conclusions

The proposed interconnection facilities including the PSPP 230-kV Central switchyard, generator 230-kV overhead tie line to the new SCE Red Bluff 230-kV substation, and its termination at the new 230-kV substation are adequate in accordance with industry standards and good utility practices, and are acceptable to Staff. We adopt staff-proposed Conditions of Certification **TSE-1** through **TSE-7** to help ensure that construction and operation of the transmission facilities for the proposed PSPP would comply with applicable LORS.

FINDINGS OF FACT

Based on the evidence, we make the following findings and conclusions:

1. The PSPP will consist of two independent concentrating solar electric generating facilities with a nominal net electrical output of 250 MW each, for a total net electrical output of 500 MW.

2. The PSPP will interconnect to the proposed SCE Red Bluff substation as the primary point of interconnection.

3. The proposed transmission line is the first point of interconnection.

4. The Conditions of Certification are adequate to ensure that PSPP does not adversely impact the transmission grid.

CONCLUSIONS OF LAW

1. The proposed PSPP outlet transmission lines and terminations are acceptable and would comply with all applicable LORS.
2. We therefore conclude that with the implementation of the various mitigation measures specified in this Decision, the proposed transmission interconnection for the project will not contribute to significant adverse direct, indirect, or cumulative impacts.

3. The Conditions of Certification below ensure that the transmission-related aspects of PSPP will be designed, constructed, and operated in conformance with the applicable laws, ordinances, regulations, and standards identified in the appropriate portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: Prior to the start of construction of the transmission facilities, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower
Grounding system

TSE-2 Before the start of construction, the project owner shall assign to the project an electrical engineer and at least one of each of the following:

a) a civil engineer;

b) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering;

c) a design engineer who is either a structural engineer or a civil engineer and fully competent and proficient in the design of power plant structures and equipment supports; or

d) a mechanical engineer (Business and Professions Code Sections 6704 et seq. require state registration to practice as either a civil engineer or a structural engineer in California).

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers as long as each engineer is responsible for a particular segment of the project, e.g., proposed earthwork, civil structures, power plant structures, or equipment support. No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical, or civil and design engineer, assigned as required by **Facility Design** Condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO, for review and approval, the names, qualifications, and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earth work and require changes; if site conditions are unsafe or do not conform to the

predicted conditions used as the basis for design of earth work or foundations.

The electrical engineer shall:

1. be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities; and
2. sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: Prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications, and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action (2001 California Building Code, Chapter 1, section 108.4, approval required; Chapter 17, section 1701.3, *Duties and Responsibilities of the Special Inspector;* Appendix Chapter 33, section 3317.7, *Notification of Noncompliance*). The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and refer to this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for the disapproval, along with the revised corrective action required to obtain the CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any construction until plans for that increment of construction have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the monthly compliance report:

a) receipt or delay of major electrical equipment;

b) testing or energization of major electrical equipment; and

c) the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: Prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, and outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all applicable LORS, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-5 The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS, and the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the CBO. Once approved, the project owner shall inform the CPM and CBO of any anticipated changes to the design, and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and CBO for review and approval.

a) The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards.

b) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

d) The project conductors shall be sized to accommodate the full output of the project.

e) Termination facilities shall comply with applicable SCE interconnection standards.

f) The project owner shall provide to the CPM:

   i) The Special Protection System (SPS) sequencing and timing if applicable,

ii) A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable, and

iii) A copy of the executed LGIA signed by the California ISO and the project owner.

Verification: Prior to the start of construction or start of modification of transmission facilities, the project owner shall submit to the CBO for approval:

1. Design drawings, specifications, and calculations conforming with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment;
2. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards;
3. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements **TSE-5** a) through f);
4. The Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.
5. A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable, and
6. A copy of the executed LGIA signed by the California ISO and the project owner.

Prior to the start of construction of or modification of transmission facilities, the project owner shall inform the CBO and the CPM of any anticipated changes to the design that are different from the design previously submitted and approved and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and CBO for review and approval.

[1] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

TSE-6 The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

Verification: The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-7 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

1. "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", and applicable interconnection standards, NEC, related industry standards.

2. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".

3. A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

E. TRANSMISSION LINE SAFETY AND NUISANCE

The Palen Solar Power Project's transmission line must be constructed and operated in a manner that protects environmental quality, assures public health and safety, and complies with applicable law. This portion of the Decision assesses the potential for the generation tie line to create the various impacts mentioned below, as well as whether mitigation measures are required to reduce any adverse effects to insignificant levels. The analysis of record takes into account both the physical presence of the line and the physical interactions of its electric and magnetic fields. The evidence submitted by Applicant and Staff was uncontested. (Exs. 1, § 5.14; 57; 300, § C.11.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The transmission tie line facilities associated with this project[1] consist of:

- An on-site 230-kV switchyard; and
- A new, single-circuit 230-kV overhead transmission line extending 10 miles from the on-site switchyard to SCE's planned Red Bluff substation.

The tie line crosses only uninhabited desert land, with no nearby residences. The line will be supported by steel pole structures, spaced approximately 1,100 feet apart, with a maximum height of 120 feet. (Ex. 300, pp. C.11-4 - C.11-5.)

Potential impacts involve aircraft collisions, interference with radio frequency communication, audible noise, hazardous shocks, nuisance shocks, fire danger, and electric and magnetic field (EMF) exposure. (Ex. 300, pp. C.11-1 - C.11-2.) The evidence conclusively establishes the following:

- *Aviation Safety*

Hazards to area aircraft can arise from the potential for collision in the navigable airspace. However, the project site is not located near a major commercial aviation center. The nearest airfield is the Blythe Airport, approximately 30 miles east of the project site. The evidence shows that the project is sufficiently distant so as not to pose a hazard. Moreover, the 120 foot maximum height of the line's support structures is well below the 200-foot height threshold of concern for the

[1] The Commission's jurisdiction over a transmission line associated with a power plant extends only to "a point of junction with any interconnected transmission system." [Pub. Res. Code §§ 25107, 25110.] The CPUC and the BLM will review the planned Red Bluff Substation. (Ex. 300, pp. C.11-1, C.11-4.)

Federal Aviation Administration. Thus, the project is unlikely to pose a hazard to users of the Blythe airport. (Ex. 300, p. C.11-5.)

- *Interference with Radio-Frequency Communication*

This potential impact is one of the indirect effects of line operation and is produced by the physical interactions of the electric fields. It arises from corona discharge and is primarily a concern for lines larger than 345-kV. The project's 230-kV line will be built and maintained according to standard SCE practices aimed at minimizing any interference. Moreover, there are no nearby residential receptors. Thus, no radio frequency interference or related complaints are likely. (Ex. 300, pp. C.11-5 - C.11-6.)

- *Audible Noise*

This is typically perceived as a characteristic crackling, hissing, or frying sound or hum, especially in wet weather.[2] The noise level depends upon the strength of the line's electric field, and is a concern mainly from lines of 345-kV or higher. It can be limited through design, construction, and maintenance practices. The project's line (230-kV) will embody a low corona design to minimize field strengths. The evidence shows that the line is not expected to add significantly to the current background noise levels.[3] (Ex. 300, p. C.11-6.)

- *Hazardous Shocks*

These could result from direct or indirect contact between an individual and the energized line. Adherence to minimum national safe operating clearances in areas where the line might be accessible to the public assures safety. Compliance with the CPUC's GO-95, as required in Condition of Certification **TLSN-1**, will ensure that adequate measures are implemented to minimize this potential impact. (Ex. 300, p. C.11-7.)

- *Nuisance Shocks*

Nuisance shocks are typically caused by direct contact with metal objects electrically charged by fields from an energized line. They are effectively minimized through grounding procedures for all metallic objects within the right-

[2] In fair weather, audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a right-of-way 100 or more feet wide. (Ex. 300, p. C.11-6.)

[3] Overall project noise levels are discussed in the **Noise** section of this Decision.

of-way as specified by the National Electrical Safety Code (NESC) as well as the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). This is required in Condition of Certification **TLSN-4**. (*Id.*)

- *Fire Hazards*

Fire can be caused by sparks from the line's conductors or by direct contact between the line and nearby trees or other combustible objects. SCE's standard fire prevention and suppression measures, and compliance with the clearance-related aspects of GO-95 as required in Condition of Certification **TLSN-3**, ensure that appropriate fire prevention measures are implemented. (Ex. 300, p. C.11-6.)

- *Exposure to Electric and Magnetic Fields*

Electric and magnetic fields (EMF) occur whenever electricity flows. The possibility of deleterious health effects from exposure to EMF has raised public health concerns about living and working near high-voltage lines. Due to the present scientific uncertainty regarding these potential health effects, CPUC policy requires reduction of EMF in the design, construction, and maintenance of new or modified lines, if feasible, without affecting the safety, efficiency, reliability, and maintainability of the transmission grid. (Ex. 300, pp. C.11-7 - C.11-8.)

The CPUC requires each new or modified transmission line in California to be designed according to the EMF-reducing guidelines of the electric utility in the service area involved. EMF produced by new lines must be similar to the fields of comparable lines in that service area. To comply with CPUC requirements for EMF management, SCE's specific field strength-reducing measures will be incorporated into the project line's design and include:

- Increasing the distance between the conductors and the ground to an optimal level;
- Reducing the spacing between the conductors to an optimal level;
- Minimizing the current in the line; and
- Arranging current flow to maximize the cancellation effects from the interaction of conductor fields. (Ex. 300, pp. C.11-9 - C.11-10.)

Applicant calculated the maximum electric and magnetic field intensities expected along the tie line route.[4] Condition of Certification **TLSN-2** requires that actual field strengths be measured, according to accepted procedures, to insure that the field intensities are similar to those of other SCE lines. These measurements will reflect both the effectiveness of the field reduction techniques used and the project's potential contribution to area EMF levels. (Ex. 300, p. C.11-10.)

Since there are no residences in the vicinity of the project's line, there will not be the long-term human residential EMF exposures associated with the health concerns of recent years. The only project-related EMF exposures of potential significance are the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the immediate vicinity of the lines. The evidence shows that these types of exposures are not significantly related to an adverse health effect. (Ex. 300, p. C.11-9.)

Overall, the evidence shows that the generation tie line will be designed, constructed, operated, and maintained in compliance with applicable LORS. Implementation of the Conditions of Certification will ensure that any impacts are reduced to less than significant levels. (Ex. 300, pp. C.11-20 - C.11-21.)

Finally, the evidence addresses the impacts of the Reconfigured Alternative #1, the Reconfigured Alternative #2, the Reconfigured Alternative #3, the Reduced Acreage Alternative, and the various No Project Alternatives in regard to this topic area. None of the Alternatives would substantially alter the level of impacts posed by the project. The Palen Project does not create significant adverse impacts in this topic area. Therefore, it is not necessary to consider any of the project's alternatives as a means of reducing impacts to below a level of significance. (Ex. 300, pp. C.11-10 - C.11-17.)

[4] Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m) for the electric field and milligauss (mG) for the companion magnetic field. (Ex. 300, p. C.11-8.) The maximum electric field strength (0.053-kV/m) and the maximum magnetic field intensity (32.5 mG) calculated at the edge of the right-of-way are similar to those of other SCE 230-kV lines. (Ex. 300, p. C.11-10.)

FINDINGS OF FACT

Based on the evidence of record, we make the following findings:

1. The Palen Solar Power Project's transmission facilities consist of an on-site 230-kV switchyard and a 10-mile long, 230-kV single-circuit overhead transmission tie line extending from the switchyard to SCE's planned Red Bluff Substation.

2. The evidentiary record includes analyses of potential impacts from the project's generation tie line involving aircraft collisions, interference with radio frequency communication, audible noise, hazardous shocks, nuisance shocks, fire danger, and EMF exposure.

3. The line crosses uninhabited desert land and there are no residences along the route of the project's new generation tie line.

4. The available scientific evidence does not establish that EMF poses a significant health hazard to humans.

5. The electric and magnetic fields generated by the project's generation tie line will be managed to the extent the CPUC considers appropriate, based on available health effects information.

6. The project's generation tie line will comply with existing LORS for public health and safety.

7. The project's generation tie line will incorporate standard EMF-reducing measures established by the CPUC and used by SCE.

8. The project owner will provide field intensity measurements before and after line energization to assess EMF contributions from the project-related current flow.

9. The new generation tie line will not result in significant adverse environmental impacts to public health and safety or cause significant direct, indirect, or cumulative impacts as a result of aviation collisions, radio frequency communication interference, fire danger, nuisance or hazardous shocks, or electric and magnetic field exposure.

10. The record addresses the impacts of the Reconfigured Alternative #1, the Reconfigured Alternative #2, the Reconfigured Alternative #3, the Reduced Acreage Alternative, and the various No Project Alternatives in regard to this topic area.

11. Implementation of any of the Alternatives mentioned above is not necessary or preferable as a means of reducing project related impacts to below a level of significance.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, will ensure that the Palen Project's transmission tie line complies with all applicable laws, ordinances, regulations, and standards relating to **Transmission Line Safety and Nuisance** as identified in the pertinent portion of **Appendix A** of this Decision.

2. The Palen Project's transmission line will not create a significant direct, indirect, or cumulative impact due to tie line safety and nuisance factors.

CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the transmission line (anywhere along the area identified by the Applicant as available for its routing) according to the requirements of: (a) California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2; (b) the High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations; and (3) Southern California Edison's EMF reduction guidelines.

Verification: At least 30 days prior to start of construction of the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California-registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the route for which the Applicant provided specific estimates. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than six months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-3 The project owner shall ensure that the right-of-way of the transmission line is kept free of combustible material, as required under the

provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-4 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related line are grounded according to industry standards regardless of ownership.

Verification: At least 30 days before the line is energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

V. PUBLIC HEALTH AND SAFETY

A. GREENHOUSE GAS (GHG) EMISSIONS

1. INTRODUCTION AND SUMMARY

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Indeed, the California Legislature has found that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" (Cal. Health & Saf. Code § 38500, Div. 25.5, Part 1).

The Palen Solar Power Project (PSPP), as a solar energy generation project, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities as currently required by the California Air Resources Board (ARB) for compliance with the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Saf. Code §§ 38500 et seq.) However, the project may be subject to future reporting requirements and GHG reductions or trading requirements as these regulations become more fully developed and implemented.

SB 1368, enacted in 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibits California utilities from entering into long-term commitments with any base load facilities that exceed the Emission Performance Standard of 0.500 metric tonnes CO_2 per megawatt-hour (1,100 pounds CO_2/MWh). Specifically, the SB 1368 Emission Performance Standard (EPS) applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California. If a project, instate or out of state, plans to sell base load electricity to a California utility that utility will have to demonstrate that the project meets the EPS. *Base load* units are defined as units that operate at a capacity factor higher than 60 percent. As a renewable electricity generating facility, PSPP is determined by rule to be compliant with the SB 1368 EPS.

The generation of electricity using fossil fuels, even in a back-up generator at a thermal solar plant, produces air emissions known as greenhouse gases in addition to the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. California is actively pursuing policies to reduce GHG emissions that include adding non-GHG emitting renewable generation resources to the system.

The regulated greenhouse gases are carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perflurocarbons (PFC). CO_2 emissions are far and away the most common of these emissions; as a result, even though the other GHGs have a greater impact on climate change on a per-unit basis, GHG emissions are often expressed in terms of "metric tons of CO_2-equivalent" (MTCO2E) for simplicity. (Ex. 300, p. C.1-74.)

Since the impact of the GHG emissions from a power plant's operation has global, rather than local, effects, those impacts should be assessed not only by analysis of the plant's emissions, but also in the context of the operation of the entire electricity system of which the plant is an integrated part. Furthermore, the impact of the GHG emissions from a power plant's operation should be analyzed in the context of applicable GHG laws and policies, such as AB 32.

In this part of the Decision we consider:

- Whether PSPP GHG construction and operation emissions will have significant impacts;
- Whether PSPP operation will be consistent with the state's GHG policies and will help achieve the state's GHG goals by causing a decrease in overall electricity system GHG emissions.

2. Policy and Regulatory Framework

We begin with the simple observation that, as the Legislature stated 35 years ago, "it is the responsibility of state government to ensure that a reliable supply of electrical energy is maintained at a level consistent with the need for such energy for protection of public health and safety, for promotion of the general welfare, and for environmental quality protection." (Pub. Res. Code, § 25001.) Today, as a result of legislation, the most recent addition to "environmental quality protection" is the reduction of GHG emissions. Several laws and statements of policy are applicable.

a. AB 32

The foundation of California's GHG policy is the California Global Warming Solutions Act of 2006. [Assembly Bill 32, codified in Health & Saf. Code, § 38560 et seq. (hereinafter AB 32).] AB 32 requires the California Air Resources Board ("CARB") to adopt regulations that will reduce statewide GHG emissions, by the year 2020, to the level of statewide GHG emissions that existed in 1990. Gubernatorial Executive Order S-3-05 (June 1, 2005) requires a further reduction, to a level 80 percent below the 1990 GHG emissions, by the year 2050.

Along with all other regulatory agencies in California, the Energy Commission recognizes that meeting the AB 32 goals is vital to the state's economic and environmental health. While AB 32 goals have yet to be translated into regulations that limit GHG emissions from generating facilities, the scoping plan adopted by ARB relies heavily on cost-effective energy efficiency and demand response, renewable energy, and prioritization of generation resources to achieve significant reductions of emissions in the electricity sector by 2020. Even more dramatic reductions in electricity sector emissions would likely be required to meet California's 2050 greenhouse gas reduction goal. Facilities under our jurisdiction, such as PSPP, must be consistent with these policies.[1]

b. Renewable Portfolio Standard

California statutory law requires the state's utilities to be obtaining at least 20 percent of their electricity supplies from renewable sources by the year 2020. (Pub. Util. Code, § 399.11 et seq.) Gubernatorial Executive Orders increase the requirement to 33 percent and require CARB to adopt regulations to achieve the goal. [Governor's Exec. Orders Nos. S-21-09 (Sept. 15, 2009), S-14-08 (Nov. 17, 2008).]

c. Emissions Performance Standard

Senate Bill (SB) 1368 of 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibits utilities from entering into long-term commitments with any base load facilities

[1] Of course, PSPP and all other stationary sources will need to comply with any applicable GHG LORS that take effect in the future.

that exceed an Emission Performance Standard (EPS) of 0.500 metric tonnes of CO_2 per megawatt-hour (this is the equivalent of 1100 pounds CO_2/MWh). (Pub. Util. Code, § 8340 et seq.; Cal. Code Regs., tit. 20, § 2900 et seq.; CPUC D0701039.) Currently, the EPS is the only LORS that has the effect of limiting power plant GHG emissions. PSPP, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]). (Ex. 300, p. C.1-74.)

d. Loading Order

In 2003 the Energy Commission and the CPUC agreed on a "loading order" for meeting electricity needs. The first energy resources that should be utilized are energy efficiency and demand response (at the maximum level that is feasible and cost-effective), followed by renewables and distributed generation, combined heat and power (also known as cogeneration), and finally the most efficient available fossil fuel resources and infrastructure development.[2] CARB's AB 32 Scoping Plan reflects these policy preferences. (California Air Resources Board, Climate Change Scoping Plan, December 2008.)

We now turn to a discussion of whether, and how well, PSPP would advance these goals and policies. We begin by reviewing the project's emissions both during construction and during operation.

3. GHG Emissions During Construction of the Facility

Construction of industrial facilities such as power plants involves concentrated on-site activities that result in short-term, unavoidable increases in vehicle and equipment emissions, including greenhouse gases. Construction of the proposed project would last about 39 months. The Applicant provided a construction emissions estimate that Staff used to calculate greenhouse gas emissions for the entirety of the construction activities. The greenhouse gas emissions estimate, presented below in Staff's **Greenhouse Gas Table 2,** was converted by Staff into MTCO2E and totaled.

[2] California Energy Commission 2008, *2008 Integrated Energy Policy Report Update*, (IEPR) (CEC-100-2008-008-CMF.)

Greenhouse Gas Table 2
Estimated PSPP Potential Construction Greenhouse Gas Emissions

Construction Element	CO_2-Equivalent (MTCO2E)[1,2,3]
On-Site Construction Equipment	70,200
On-Site Motor Vehicles	1,500
Off-Site Motor Vehicles	29,300
Construction Total	101,000

1 - One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms
2 - The vast majority of the CO2E emissions, over 99%, is CO_2 from these combustion sources.
3 - This does not include the revised construction description that now includes an onsite concrete batch plant and on-site fuel depot. On balance staff believes that these changes will not significantly impact the totals, which might be estimated to be higher or lower depending the balance of how concrete and fuel deliveries would have been handled versus the deliveries of the materials to make concrete (sand, aggregate, cement, water) and daily fueling of equipment by fuel/lube truck(s).
Source: Ex. 300, p. C.1-78.

There is no adopted, enforceable federal or state LORS applicable to PSPP construction emissions of GHG. Nor is there a quantitative threshold over which GHG emissions are considered "significant" under CEQA. Nevertheless, there is guidance from regulatory agencies on how the significance of such emissions should be assessed. For example, the most recent guidance from CARB staff recommends a "best practices" threshold for construction emissions. [CARB, Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act (Oct. 24, 2008), p. 9]. Such an approach is also recommended on an interim basis, or proposed, by major local air districts.

We understand that "best practices" includes the implementation of all feasible methods to control construction-related GHG emissions. As the "best practices" approach is currently recommended by the state agency primarily responsible not only for air quality standards but also for GHG regulation, we will use it here to assess the GHG emissions from PSPP construction.

In order to limit vehicle emissions of both criteria pollutants and GHG during construction, PSPP will use (1) operational measures, such as limiting vehicle idling time and shutting down equipment when not in use; (2) regular preventive maintenance to prevent emission increases due to vehicular engine problems; and (3) use of low-emitting diesel engines meeting federal emissions standards for construction equipment, whenever available. (Ex. 300, p. C.1-81.)

Control measures that we have adopted elsewhere in this Decision to address criteria pollutant emissions would further minimize greenhouse gas emissions to the extent feasible. Also, the requirement that the owner use newer construction equipment will increase fuel efficiency and minimize tailpipe emissions. (See, e.g. Condition of Certification **AQ-SC5**.)

We find that the measures described above to directly and indirectly limit the emission of GHGs during the construction of PSPP are in accordance with current best practices. We therefore find that the evidence shows that the GHG emissions from construction activities would not exceed the level of significance.

4. Direct/Indirect Operation Impacts and Mitigation

a. Anticipated Emissions

For this solar project the primary fuel, solar energy, is greenhouse gas-free, but there are two propane-fired steam boilers for HTF freeze protection. (Ex. 318, p. C.1-2.) The proposed PSPP Project would cause GHG emissions from these propane-fired boilers, and gasoline and diesel fuel use in the maintenance vehicles, offsite delivery vehicles, staff and employee vehicles, the two emergency fire water pump engines, and two emergency generator engines. Another GHG emission source for this proposed project is SF_6 from electrical equipment leakage. (Ex. 300, p. C.1-79) Operations GHG emissions are shown in Staff's **Greenhouse Gas Table 3**. All emissions are converted to CO_2-equivalent and totaled.

Greenhouse Gas Table 3
Estimated PSPP Potential Operating Greenhouse Gas Emissions

	Annual CO_2 Equivalent (MTCO2E)[1]
Auxiliary Boilers[2]	7,710
Emergency Generators[2]	144
Fire Pumps[2]	16
Maintenance Vehicles[2]	109
Delivery Vehicles[2]	4,507
Employee Vehicles[2]	2,320
Equipment Leakage (SF_6)	12
Total Project GHG Emissions – MTCO2E[2]	**14,818**
Facility MWh per year	1,000,000
Facility GHG Emission Rate (MTCO2E/MWh)	0.015

1 - One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
2 - The vast majority of the CO2E emissions, over 99%, is CO_2 from these emission sources.
Source: Ex. 300, p. C.1-79

The proposed project is estimated to emit, directly from primary and secondary emission sources on an annual basis, over 10,000 metric tonnes of CO_2-equivalent GHG emissions per year. PSPP, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]). Regardless, PSPP has an estimated GHG emission rate of 0.015 MTCO2E/MWh, well below the Greenhouse Gas Emission Performance Standard of 0.500 MTCO2/MWh.

b. Assessment of Operational Impacts

As we have previously noted, GHG emissions have global, rather than local, impacts. While it may be true that in general, when an agency conducts a CEQA analysis of a proposed project, it does not need to analyze how the operation of the proposed project is going to affect the entire system of projects in a large multistate region, analysis of the impacts of GHG emissions from power plants requires consideration of the project's impacts on the entire electricity system.

California's electricity system – which is actually part of a system serving the entire western region of the U.S., Canada, and Mexico – is large and complex. Hundreds of power plants, thousands of miles of transmission and distribution lines, and millions of points of electricity demand operate in an interconnected, integrated, and simultaneous fashion. Because the system is integrated, and because electricity is produced and consumed instantaneously, and will continue to be until large-scale electricity storage technologies are available, any change in demand and, most important for this analysis, any change in output from any generation source, is likely to affect the output from all generators (*Committee Guidance on Fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts in Power Plant Siting Applications,* CEC-700-2009-004, pp. 20 to 22.) [3] (Hereinafter referred to as "Committee CEQA Guidance")

The California Independent System Operator (CAISO) is responsible for operating the system so that it provides power reliably and at the lowest cost. Thus the CAISO dispatches generating facilities generally in order of cheapest to operate (i.e., typically the most efficient) to most expensive (i.e., typically the least efficient). (*Id*., p. 20.) Because operating cost is correlated with heat rate (the amount of fuel that it takes to generate a unit of electricity), and, in turn, heat rate is directly correlated with emissions (including GHG emissions), when a power plant runs, it usually will take the place of another facility with higher emissions that otherwise would have operated. Due to the integrated nature of the electrical grid, the operational plant and the displaced plant may be hundreds of miles apart (Committee CEQA Guidance, p. 20.) Because one plant's operation could affect GHG emissions hundreds of miles away, the necessity of assessing their operational GHG emissions on a system-wide basis becomes clear.

As California moves towards an increased reliance on renewable energy, non-renewable energy resources will be curtailed or displaced. These potential reductions in non-renewable energy, shown in **Greenhouse Gas Table 4**, could be as much as 36,586 GWh. These predictions are conservative in that the predicted growth in retail sales incorporates the assumption that the impacts of energy efficiency programs are already included in the current retail sales forecast. If, for example, forecasted retail sales in 2020 were lowered by 10,000 GWh due to the success of energy efficiency programs, non-renewable energy needs would fall by an additional 6,700 to 8,000 GWh/year, depending on the

[3] The report was issued in March 2009 and is found on the Commission website at: **http://www.energy.ca.gov/2009publications/CEC-700-2009-004-CEC-700-2009-004.PDF**

RPS level, totaling as much as 45,000 GWh per year of reduced non-renewable energy, depending on the RPS assumed.

Greenhouse Gas Table 4
Estimated Changes in Non-Renewable Energy Potentially Needed to Meet California Loads, 2008-2020

California Electricity Supply	**Annual GWh**	
Statewide Retail Sales, 2008, actual[1]	264,794	
Statewide Retail Sales, 2020, forecast[1]	289,697	
Growth in Retail Sales, 2008-20	24,903	
Growth in Net Energy for Load[2]	29,840	
California Renewable Electricity	**GWh @ 20% RPS**	**GWh @ 33% RPS**
Renewable Energy Requirements, 2020[3]	57,939	95,600
Current Renewable Energy, 2008	29,174	
Change in Renewable Energy-2008 to 2020	28,765	66,426
Resulting Change in Non-Renewable Energy	176	(36,586)

1 - 2009 IPER Demand Forecast, Form 1.1c. Excludes pumping loads for entities that do not have an RPS.
2 - 2009 IEPR Demand Forecast, Form 1.5a.
3 - RPS requirements are a percentage of retail sales.
Source: Ex. 300, p. C.1-82

High GHG-emitting resources, such as coal, are effectively prohibited from entering into new 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 **Greenhouse Gas Table 5**.

Greenhouse Gas Table 5
Expiring Long-term Contracts with Coal-fired Generation 2009 – 2020

Utility	Facility[1]	Contract Expiration	Annual GWh Delivered to California
PG&E, SCE	Misc In-state Qualifying Facilities[1]	2009-2019	4,086
LADWP	Intermountain	2009-2013	3,163 [2]
City of Riverside	Bonanza, Hunter	2010	385
Department of Water Resources	Reid Gardner	2013 [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**

1 - All facilities are located out-of-state except for the Miscellaneous In-state Qualifying Facilities.
2 - Estimated annual reduction in energy provided to LADWP by Utah utilities from their entitlement by 2013.
3 - Contract not subject to Emission Performance Standard, but the Department of Water Resources has stated its intention not to renew or extend.
Source: Ex. 300, p. C.1-83.

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,[4] all the coal contracts (including those in **Greenhouse Gas Table 5**, 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 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

[4] 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.

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.

The State Water Resource Control Board (SWRCB) has proposed substantial changes to OTC units, shown in **Greenhouse Gas Table 6**, which would likely require retrofit, retirement, or substantial curtailment of dozens of generating units. In 2008, these units collectively produced about 58,000 GWh. While those OTC facilities owned and operated by utilities and recently-built combined cycles may well install dry or wet cooling towers, it is unlikely that the aging, merchant plants will do so. Most of these units already operate at low capacity factors, reflecting their limited ability to compete in the current electricity market. New resources would continue to out-compete aging plants, displacing the energy provided by OTC facilities and accelerating their retirement.

It must be noted, however, that a project like PSPP located far from coastal load pockets such as the Greater Los Angeles Local Capacity Area, would likely provide energy support to facilitate the retirement of some aging and/or OTC power plants, but would not likely provide any local capacity support at or near the coastal OTC units. We expect that local capacity and voltage support will increasingly be provided by newer, more-efficient natural gas and other forms of generation, including, to the extent practical, distributed generation resources such as rooftop solar. These resources will also help displace older, less-efficient generation and accelerate retirement of those units.

Greenhouse Gas Table 6
Aging and Once-Through Cooling Units: 2008 Capacity and Energy Output[1]

Plant, Unit Name	Owner	Local Reliability Area	Aging Plant?	Capacity (MW)	2008 Energy Output (GWh)	GHG Emission Rate ($MTCO_2/MWh$)
Diablo Canyon 1, 2	Utility	None	No	2,232	17,091	Nuclear
San Onofre 2, 3	Utility	L.A. Basin	No	2,246	15,392	Nuclear
Broadway 3[2]	Utility	L.A. Basin	Yes	75	90	0.648
El Centro 3, 4[2]	Utility	None	Yes	132	238	0.814
Grayson 3-5[2]	Utility	LADWP	Yes	108	150	0.799
Grayson CC[2]	Utility	LADWP	Yes	130	27	0.896
Harbor CC	Utility	LADWP	No	227	203	0.509
Haynes 1, 2, 5, 6	Utility	LADWP	Yes	1,046	1,529	0.578
Haynes CC	Utility	LADWP	No	560	3,423	0.376
Humboldt Bay 1, 2[1]	Utility	Humboldt	Yes	107	507	0.683
Olive 1, 2[2]	Utility	LADWP	Yes	110	11	1.008
Scattergood 1-3	Utility	LADWP	Yes	803	1,327	0.618
Utility-Owned				**7,776**	**39,988**	**0.693**
Alamitos 1-6	Merchant	L.A. Basin	Yes	1,970	2,533	0.661
Contra Costa 6, 7	Merchant	S.F. Bay	Yes	680	160	0.615
Coolwater 1-4[2]	Merchant	None	Yes	727	576	0.633
El Segundo 3, 4	Merchant	L.A. Basin	Yes	670	508	0.576
Encina 1-5	Merchant	San Diego	Yes	951	997	0.674
Etiwanda 3, 4[2]	Merchant	L.A. Basin	Yes	666	848	0.631
Huntington Beach 1, 2	Merchant	L.A. Basin	Yes	430	916	0.591
Huntington Beach 3, 4	Merchant	L.A. Basin	No	450	620	0.563
Mandalay 1, 2	Merchant	Ventura	Yes	436	597	0.528
Morro Bay 3, 4	Merchant	None	Yes	600	83	0.524
Moss Landing 6, 7	Merchant	None	Yes	1,404	1,375	0.661
Moss Landing 1, 2	Merchant	None	No	1,080	5,791	0.378
Ormond Beach 1, 2	Merchant	Ventura	Yes	1,612	783	0.573
Pittsburg 5-7	Merchant	S.F. Bay	Yes	1,332	180	0.673
Potrero 3	Merchant	S.F. Bay	Yes	207	530	0.587
Redondo Beach 5-8	Merchant	L.A. Basin	Yes	1,343	317	0.810
South Bay 1-4	Merchant	San Diego	Yes	696	1,015	0.611
Merchant-Owned				**15,254**	**17,828**	**0.605**
Total In-State OTC				**23,030**	**57,817**	

1 - 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.
2 - Units are aging but are not OTC.
Source: Ex. 300, p. C.1-85.

The proposed PSPP promotes the state's efforts to move towards a high-renewable, low-GHG electricity system, and, therefore, reduce the amount of

natural gas used by electricity generation and greenhouse gas emissions. Its use of solar power, resultant limited GHG emissions, and likely replacement of older existing plant capacity, furthers the state's strategy to promote generation system efficiency and reduce fossil fuel use and GHG emissions.

Net GHG emissions for the integrated electric system will decline when new renewable power plants are added to: (1) move renewable generation towards the 33 percent target; (2) improve the overall efficiency, or GHG emission rate, of the electric system; or (3) serve load growth or capacity needs more efficiently, or with fewer GHG emissions. We find that PSPP furthers the state's progress toward achieving these important goals and is consistent with the state policies we discussed in Section 2 of this chapter.

5. Cumulative Impacts on Greenhouse Gases

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts." (CEQA Guidelines § 15355.) "A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts." (CEQA Guidelines § 15130[a][1].) Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

GHG assessment is by its very nature a cumulative impact assessment. PSPP would emit a limited amount of greenhouse gases and, therefore, we have analyzed its potential cumulative impact in the context of its effect on the electricity system, resulting GHG emissions from the system, and existing GHG regulatory requirements and GHG energy policies. The evidence supports our finding that PSPP would not cause or contribute to a significant adverse cumulative impact on GHG, and would in fact result in a decrease in GHG from the generation of electricity in California.

6. Closure and Decommissioning

Eventually the facility will close, either at the end of its useful life or due to some unexpected situation such as a natural disaster or catastrophic facility breakdown. When the facility closes, all sources of air emissions would cease to operate and thus impacts associated with those greenhouse gas emissions

would no longer occur. The only other expected GHG emissions would be temporary equipment exhaust (off-road and on-road) from the dismantling activities. These activities would be of much a shorter duration than construction of the project, equipment is assumed to have lower comparative GHG emissions due to technology advancement, and would be required to be controlled in a manner at least equivalent to that required during construction. Therefore, we find that while there will be a temporary CEQA impact on GHG during decommissioning, it will be less than significant.

7. Mitigation Measures/Proposed Conditions of Certification

No Conditions of Certification related to Greenhouse Gas emissions are proposed. The project owner would comply with any future applicable GHG regulations formulated by the ARB, such as GHG reporting or emissions cap and trade markets.

FINDINGS OF FACT

1. The GHG emissions from the PSPP project construction are likely to be 101,000 $MTCO_2$ equivalent ("$MTCO_2E$") during the 39-month construction period.

2. There is no numerical threshold of significance under CEQA for construction-related GHG emissions.

3. PSPP will use best practices to control its construction-related GHG emissions.

4. Construction-related GHG emissions are less than significant if they are controlled with best practices.

5. State government has a responsibility to ensure a reliable electricity supply, consistent with environmental, economic, and health and safety goals.

6. California utilities are obligated to meet whatever demand exists from any and all customers.

7. Under SB 1368 and implementing regulations, California's electric utilities may not enter into long-term commitments with base load power plants with CO_2 emissions that exceed the Emissions Performance Standard ("EPS") of 0.500 $MTCO_2$ / MWh.

8. The maximum annual equivalent CO_2 emissions from PSPP operation will be 14,818 MTCO2E, which constitutes an emissions performance factor of 0.015 MTCO2E / MWh.

9. PSPP is determined by rule to be compliant with the SB 1368 EPS.

10. AB 32 requires CARB to adopt regulations that will reduce statewide GHG emissions, by the year 2020, to the 1990 level. Executive Order S-3-05 requires a further reduction, by the year 2050, to 80 percent below the 1990 level.

11. The California Renewable Portfolio Standard (RPS) requires the state's electric utilities obtain at least 33 percent of the power supplies from renewable sources, by the year 2020.

12. California's power supply loading order requires California utilities to obtain their power first from the implementation of all feasible and cost-effective energy efficiency and demand response, then from renewables and distributed generation, and finally from the most efficient available fossil-fired generation and infrastructure improvement.

13. There is no evidence in the record that construction or operation of PSPP will be inconsistent with the loading order.

14. When it operates, PSPP will displace generation from higher-GHG-emitting power plants.

15. PSPP will replace power from coal-fired power plants that will be unable to contract with California utilities under the SB 1368 EPS, and from once-through cooling power plants that must be retired.

16. PSPP operation will reduce overall GHG emissions from the electricity system.

17. The role of fossil fuel-fired generation will diminish as technology advances, coupled with efficiency and conservation measures, make round-the-clock availability of renewables generation feasible.

CONCLUSIONS OF LAW

1. PSPP construction-related GHG emissions will not cause a significant adverse environmental impact.

2. The GHG emissions from a power plant's operation should be assessed in the context of the operation of the entire electricity system of which the plant is an integrated part.

3. PSPP operational GHG emissions will not cause a significant environmental impact.

4. The SB 1368 EPS does not apply to PSPP, but if it did PSPP GHG emissions will meet it.

5. PSPP operation will help California utilities meet their RPS obligations.

6. PSPP operation will be consistent with California's loading order for power supplies.

7. PSPP operation will foster the achievement of the GHG goals of AB 32 and Executive Order S-3-05.

8. The GHG emissions of any power plant must be assessed within the context of the entire electricity system on a case-by-case basis to ensure that the project will be consistent with applicable goals and policies.

9. Any new power plant that we certify must:
    a) not increase the overall system heat rate;
    b) not interfere with generation from existing renewables or with the integration of new renewable generation; and
    c) have the ability to reduce system-wide GHG emissions.

B. AIR QUALITY

Operation of the Palen Solar Power Project (PSPP or proposed project) will create combustion products and use certain materials containing hazardous compounds that could expose the general public and workers at the facility to potential health effects.

We evaluate the expected air quality impacts from the emissions of criteria air pollutants from both the construction and operation of the PSPP. Criteria air pollutants are defined as air contaminants for which the state and/or federal governments have established ambient air quality standards to protect public health.

The criteria pollutants analyzed within this section are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), and particulate matter (PM). Lead is not analyzed as a criteria pollutant, but lead and other toxic air pollutant emissions impacts are analyzed in the Public Health Section of this document. Two subsets of particulate matter are inhalable particulate matter (less than 10 microns in diameter, or PM10) and fine particulate matter (less than 2.5 microns in diameter, or PM2.5). 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 ozone 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. Global climate change and greenhouse gas (GHG) emissions from the proposed project are analyzed in the context of cumulative impacts.

In consultation with the South Coast Air Quality Management District, (SCAQMD or District), Staff evaluated whether the project will likely conform with applicable laws, ordinances, regulations, and standards (LORS); whether it will likely result in new violations of ambient air quality standards or contribute substantially to existing violations of those standards; and whether the project's proposed mitigation measures will likely reduce potential impacts to insignificant levels under the California Environmental Quality Act (CEQA).

The evidence establishes that the PSPP will meet the provisions of all applicable air quality laws, and with implementation of the mitigation measures set forth in the Conditions of Certification, will not cause any new violations of state or federal standards, even when modeled with worst case ambient concentrations.

Thus, there are no direct adverse air quality impacts attributable to the project. (Exs. 1; 301 and 317.)

The PSPP will have substantially lower greenhouse gas[1] emissions per megawatt-hour than fossil fueled generation resources in California. The PSPP, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1].)

The record includes the assumptions, methodologies, and results of the air quality analyses performed by the Applicant and Staff to evaluate the potential impacts associated with air emissions from construction and operation of the project.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Federal Clean Air Act and the California Clean Air Act both 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 (CARB), are typically more protective than the federal AAQS, which are established by the U.S. Environmental Protection Agency (EPA). The standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). The state and federal AAQS are listed in **AIR QUALITY Table 1** below.

[1] Greenhouse gas emissions are not criteria pollutants, but they affect global climate change. In that context, the GHG emissions from the proposed project are evaluated in Appendix Air-1 of Exhibit 200, which presents information on GHG emissions related to electricity generation, and describes the applicable GHG standards and requirements.

Air Quality Table 1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 ppm [a] (147 μg/m^3)	0.070 ppm (137 μg/m^3)
	1 Hour	—	0.09 ppm (180 μg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm (100 μg/m^3)	0.03 ppm (57 μg/m^3)
	1 Hour	0.100 ppm (188 μg/m^3)[b]	0.18 ppm (339 μg/m^3)
Sulfur Dioxide (SO_2)	Annual	0.030 ppm (80 μg/m^3)	—
	24 Hour	0.14 ppm (365 μg/m^3)	0.04 ppm (105 μg/m^3)
	3 Hour	0.5 ppm (1300 μg/m^3)	—
	1 Hour	—	0.25 ppm (655 μg/m^3)
Particulate Matter (PM10)	Annual	—	20 μg/m^3
	24 Hour	150 μg/m^3	50 μg/m^3
Fine Particulate Matter (PM2.5)	Annual	15 μg/m^3	12 μg/m^3
	24 Hour	35 μg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 μg/m^3
Lead	30 Day Average	—	1.5 μg/m^3
	Calendar Quarter	1.5 μg/m^3	—
Hydrogen Sulfide (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	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: Ex. 301, p. C.1-8.
Notes:
[a] – 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.
[b] – The U.S. EPA is in the process of implementing this new standard, which became effective April 12, 2010. This standard is based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations.

As shown in the table, the averaging times for the various air quality standards and the times over which they are measured, range from one-hour to annual averages. The standards are read as a concentration in parts per million (ppm), or as a weighted mass of material per a volume of air in milligrams or micrograms of pollutant in a cubic meter of air (mg/m^3 or μg/m^3, respectively.)

In general, an area is designated as “attainment” if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as “nonattainment” if concentration of a particular contaminant standard is violated. Where there is insufficient data to support designation as either attainment or nonattainment, the area can be designated as unclassified. An area could be attainment for one air contaminant while nonattainment for another, or attainment under the federal standard and nonattainment under the state standard for the same air contaminant.

1. Existing Air Quality

The project site is located in the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the SCAQMD. As shown in **Air Quality Table 2,** the Riverside County portion of the MDAB is designated as non-attainment for the state ozone and PM10 standards. This area is designated as attainment or unclassified for all federal criteria pollutant ambient air quality standards and the state CO, NO_X, SO_X, and PM2.5 standards. (Ex. 301, p. C.1-9.)

Air Quality Table 2
Federal and State Attainment Status
Project Site Area within Riverside County

Pollutant	Attainment Status [a]	
	Federal	State
Ozone	Attainment [b]	Moderate Nonattainment
CO	Attainment	Attainment
NO_2	Attainment [c]	Attainment
SO_2	Attainment	Attainment
PM10	Attainment [b]	Nonattainment
PM2.5	Attainment	Attainment

Source: Ex. 301, p. C.1-9.
[a] Attainment = Attainment or Unclassified, where Unclassified is treated the same as Attainment for regulatory purposes.
[b] Attainment status for the site area only, not the entire MDAB.
[c] Nitrogen dioxide attainment status for the new federal 1-hour NO2 standard is scheduled to be determined by January 2012.

2. Construction Impacts and Mitigation

The total duration of project construction for PSPP is estimated to be approximately 39 months, and would include construction of the two solar fields and two power blocks. Different areas within the project site and the construction laydown areas would be disturbed at different times over the period. Total construction disturbance area would be approximately 5,200 acres, and the

permanent disturbance area of the project operations would be approximately 2,970 acres. Construction elements of the PSPP would include the two solar power plants (power block and solar array, as well as other ancillary facilities such as the administration buildings, warehouse, and parking lot), an electric transmission line to a substation located approximately 11.5 miles to the west, access roads, and rerouted drainage channels. (Ex. 301, p. C.1-15.)

Combustion emissions would result from the off-road construction equipment, including diesel construction equipment used for site grading, excavation, and construction of onsite structures, and water and soil binder spray trucks used to control construction dust emissions; and off-road construction equipment used at the onsite batch plant. Fuel combustion emissions also would result from exhaust from on-road construction vehicles, including heavy duty diesel trucks used to deliver materials, other diesel trucks used during construction, and worker personal vehicles and pickup trucks used to transport workers to and from and around the construction site. Fugitive dust emissions would result from site grading/excavation activities, installation of a temporary 12-kV construction power transmission and the new project power transmission lines, completion of onsite wells and water pipelines, construction of power plant facilities, roads, and substations, the use of an onsite batch plant, and vehicle travel on paved and unpaved roads. There will also be emissions associated with the use of an onsite fuel depot. (Ex. 301, p. C.1-15.)

The annual emissions for the shorter duration offsite construction activities are based on the following construction durations: one month for access road construction and seven months for transmission line construction. **Air Quality Table 3** below presents the Applicant's estimate of maximum mitigated annual construction-related emissions for NO_X, VOC, CO, PM10, PM2.5 and SO_X.

Air Quality Table 3
PSPP Construction - Maximum Annual Emissions (tons/year)

	NOx	VOC	CO	PM10	PM2.5	SOx
Construction Emissions						
Main Power Block (entire project)						
Off-road Equipment Exhaust	164.32	19.53	82.28	7.53	7.01	0.36
On-road Vehicles	4.90	0.31	2.05	0.16	0.15	0.01
Asphaltic Paving	--	0.03	--	--	--	--
Fugitive Dust from Paved Roads	--	--	--	0.64	0.11	--
Fugitive Dust from Unpaved Roads	--	--	--	71.14	15.17	--
Fugitive Dust from Constr. Activities	--	--	--	73.33	15.08	--
Batch Plant Emissions	2.14	0.16	1.18	2.3	2.3	0.00
Fuel Depot	--	1.13	--	--	--	--
Subtotal - Power Block Onsite Emissions	**171.37**	**21.16**	**85.51**	**155.1**	**39.83**	**0.37**
Power Block On-road Equipment (offsite)	36.82	9.00	95.73	16.9	4.19	0.16
Access Road Construction (offsite)	0.81	0.07	0.39	0.29	0.08	0.00
Transmission Line Construction (offsite)	0.90	0.17	1.84	0.60	0.23	0.16

Source: Ex. 301, p. C.1-16.
Note: Emissions that were not added may not be additive due to occurring at different times during the construction schedule, and all emissions include fugitive dust as appropriate.

Because the project site is in an area that is in attainment with all NAAQS, the project is not required to develop a General Conformity determination. (Ex. 301, p. C.1-46.)

Using estimated peak hourly, daily, and annual construction equipment exhaust emissions, the Applicant modeled PSPP's construction emissions to determine impacts. To determine the construction impacts on ambient standards (i.e. 1-hour through annual) it was assumed that the emissions would occur during a daily construction schedule of 10-hour days from March through September (7am to 5pm) and 8-hour days from October through February (8am to 4pm). The predicted proposed project pollutant concentration levels were added to conservatively worst-case maximum background concentration levels to determine the cumulative effect. The results of the Applicant's modeling analysis are presented in **Air Quality Table 4**. (Ex. 301, p. C.1-22.)

Air Quality Table 4
Maximum Project Construction Impacts

Pollutants	Avg. 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-hr.	351.9	45.1[a]-	397.0	339	117%
	Annual	4.9	19.0	23.9	57	42%
CO	1-hr	575	2,645	3,220	23,000	14%
	8-hr	282	878	1,160	10,000	12%
PM10	24	51.9	83	134.9	50	270%
	Annual	3.9	30.5	34.1	20	171%
PM2.5	24	14.5	20.5	35.0	35	100%
	Annual	1.32	8.7	10.0	12	83%
SO_2	1-hr	1.71	23.6	25.3	665	4%
	3-hr	1.33	15.6	16.9	1,300	1%
	24-hr	0.42	13.1	13.5	105	13%
	Annual	0.01	3.5	3.5	80	4%

Source: Ex. 301, p. C.1-22.
Note: This is the background concentration that corresponds with the hour with the highest combined matched hourly project impact and hourly monitored NO_2 background concentration.

As shown, this modeling analysis indicates, with the exception of PM10 and 1-hour NO_2, that the proposed project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. The conditions that would create worst-case project modeled impacts (low wind speeds) are not the same conditions when worst-case background is expected for PM10. Additionally, the worst-case PM10 impacts occur at the fence line and drop off quickly with distance from the fence line. In light of the existing PM10 non-attainment status for the project site area, we find the construction PM10 emissions impacts to be potentially CEQA significant and require that the off-road equipment and fugitive dust PM10 emissions be mitigated pursuant to CEQA. (Ex. 301, p.C.1-22.)

The Applicant's modeling results indicate that 1-hour NO_2 concentrations above the state standard only occur within 200 meters of the north fence line at night. Staff believes that these results are conservative and over predict the impacts for project construction for the following reasons:

- The modeling analysis included the very conservative input assumptions of using area sources to model all of the construction NO_X emissions, except for

the concrete batch plant generator which was modeled as a point source and consequently found to have minimal NO_2 impacts (less than 3 µg/m3).

- Impacts exceeding the state standard only occurred for five out of the 26,304 hours modeled and were found to only occur at night when construction activities would normally be winding down or at much lower level of emissions than during mid-day.
- The modeling, which did incorporate the ozone limiting method (OLM), did not undergo further refinement to determine the actual expected maximum conversion of NO to NO_2 in the very short time period the emissions plume would take to get to and just past the fence line. OLM assumes immediate 100 percent conversion based on the available concentration of ozone. Staff is certain that such an analysis would show that the maximum NO_2 concentrations from construction would not exceed the state standard.

However, to be certain that there would be no risk to public health from construction NO_X emissions, we require that the off-road construction equipment be mitigated by requiring the use of equipment that meets the latest U.S. EPA and ARB engine emission standards. (Ex. 301, p. C.1-23.)

The evidence shows that with implementation of Staff-proposed mitigation measures the construction impacts would not contribute substantially to exceedances of PM10 or ozone standards, nor cause new exceedances of the 1-hour state NO_2 standard. (Ex. 301, p. C.1-23.)

The modeling analysis shows that, after implementation of the recommended emission mitigation measures, the proposed project's construction is not predicted to cause new exceedances of the NAAQS. (Ex. 301, p. C.1-23.)

3. Operation Impacts and Mitigation

The PSPP facility would be a nominal 500 Megawatt (MW) solar electrical generating facility. The direct air pollutant emissions from power generation are negligible; however, there are auxiliary equipment and maintenance activities necessary to operate and maintain the facility. (Ex. 301, pp. C.1-17 to C.18.)

The results of the Applicant's modeling analysis of maximum annual operation emissions are shown below in **Air Quality Table 5.** As previously noted, because the project site is in an area that is in attainment with all NAAQS, the project is not required to develop a General Conformity determination. (Ex. 301, p. C.1-18.)

Air Quality Table 5
PSPP Operations - Maximum Annual Emissions (tons/yr)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Auxiliary Boilers	0.71	0.32	2.40	0.64	0.64	0.72
Emergency Fire Pump Engines	0.09	0.00	0.09	0.00	0.00	0.00
Emergency Generators	1.47	0.08	0.84	0.05	0.05	0.00
Auxiliary Cooling Towers	---	---	---	0.26	0.26	---
HTF Vents	---	0.30	---	---	---	---
HTF Fugitives	---	9.59	---	---	---	---
Onsite Maintenance Vehicles	0.10	0.01	0.07	31.32	6.64	0.00
Fuel Depot	--	0.004	--	--	--	--
Subtotal of Onsite Emissions	**2.37**	**10.30**	**3.40**	**32.27**	**7.59**	**0.72**
Offsite Emissions						
Delivery Vehicles	1.46	0.11	0.41	0.11	0.08	0.00
Employee Vehicles	1.65	1.73	16.48	3.41	1.60	0.02
Subtotal of Offsite Emissions	**3.11**	**1.84**	**16.89**	**3.52**	**1.68**	**0.022**
Total Maximum Annual Emissions	**5.48**	**12.14**	**20.29**	**35.79**	**9.27**	**0.74**

Source: Ex. 317, p. C.1- 5.

A modeling analysis using the EPA-approved AERMOD model was performed to estimate the impacts of the project's NO_2, PM10, PM2.5, CO, and SO_2 maintenance and stationary emissions resulting from project operation. **Air Quality Table 6** presents the results of this modeling analysis added to conservatively estimated worst-case maximum background concentration levels, to determine the cumulative effect. (Ex. 301, pp. C.1-24 to C.1-25.)

Air Quality Table 6
Project Operation Emission Impacts

Pollutants	Avg. 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-hr CAAQS	139.7	119	258.7	339	76%
	1-hr NAAQS	171.6	NA	171.6	188	91%
	Annual	0.03	19.0	19.0	57	33%
CO	1-hr	183.5	2,645	2,829	23,000	12%
	8-hr	73.9	878	952	10,000	10%
PM10	24	14.1	83	97.1	50	194%
	Annual	1.8	30.5	32.3	20	162%
PM2.5	24	2.5	20.5	23.0	35	66%
	Annual	0.39	8.7	9.1	12	76%
SO_2	1-hr	3.1	23.6	26.7	665	4%
	3-hr	2.1	15.6	17.7	1,300	1%
	24-hr	0.23	13.1	13.3	105	13%
	Annual	0.008	3.5	3.5	80	4%

Source: Ex. 301, p. C.1-24.

As shown, with the exception of 24-hour and annual PM10 impacts, the proposed project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants.

Given the modeled PM10 exceedances, and in light of the existing PM10 and ozone nonattainment status for the project area, we find that the operating emissions of nonattainment pollutants and their precursors NO_X, VOC, and PM emissions) are potentially CEQA significant and mitigation is required for the stationary equipment, the off-road maintenance equipment, and fugitive dust emissions. (Ex. 301, pp. C.1-24 to C.1-25.)

The record further shows that, based on the modeling analysis and with implementation of recommended mitigation measures, as adopted in the Conditions of Certification below, project operations will not cause new exceedances of NAAQS, and no significant CEQA impacts will occur. (Ex. 301, p. C.1-25.)

The District has determined, after a re-analysis of the HTF piping system fugitive VOC emissions, that the total facility emissions of VOC are above the District's offset thresholds and therefore the District is requiring that 68 pounds per day of

VOC emission reduction credits (ERCs) be provided to offset the VOC emissions of the PSPP. (Ex. 317, pp. C.1-5 to C.1-6.)

The evidence shows that the proposed project's stationary source proposed emission controls/emission levels for criteria pollutants meet regulatory requirements and the that the proposed stationary source emission levels are reduced adequately. The Applicant will be required to provide the VOC ERCs prior to publication of the Final Determination of Compliance. However, the District does not require the auxiliary cooling towers to be permitted as stationary sources, so we have included a Condition of Certification **AQ-SC10** to formalize the Applicant's stipulated PM10 mitigation measure for this emission source. The proposed emission controls and emission levels, along with the Applicant proposed and Staff recommended emission mitigation measures, would mitigate all proposed project air quality impacts to less than significant pursuant to CEQA. (Ex. 317, p. C-1-8.)

We concur with the District's revised determination that VOC offsets are required for the project to comply with the District's New Source Review rule. VOC ERCs are the most abundant type of ERC in the SCAQMD offset bank and the Applicant should be able to obtain these ERCs in a timely manner (Ex. 317, p. C.1-6). The District will not provide the Permit to Construct for PSPP until the ERC sources are properly identified (purchased ERCs or right to purchase contracts for ERCs); therefore, we believe that this LORS issue will be properly satisfied by the District. Condition of Certification **AQ-SC9** has been included so that staff will get a copy of the ERC identification provided to the District in order to obtain the Permit to Construct.

While we agree that VOC offsets are needed for LORS compliance, we do not believe that VOC offsets are required as CEQA mitigation, consistent with Staff's findings of other recent thermal solar projects, because: 1) the project is located in a federal ozone attainment area and the project's relatively low level of VOC emissions would not impact that status; 2) the project will enable indirect emission reductions from the fossil fuel fired power plants; and 3) the project is implementing Best Available Control Technology for the stationary VOC emission sources and Condition of Certification **AQ-SC6** will mitigate the operating vehicles exhaust emissions. (Ex. 317, p. C-1-8.)

4. Construction and Operation Overlap Impacts and Mitigation

This proposed project includes the construction of two separate power block units that would start operation at different times as each completes construction.

Construction would be scheduled to begin in late 2010 and continue through the fourth quarter of 2013. Commercial operation of Unit #1 is expected to begin in mid-2013, with commercial operation of Unit #2 following by the end of 2013. Although there would be an overlap of construction and operation emissions of approximately six months, this would not be the worst case scenario as maximum construction emissions occur much earlier during the construction schedule. Thus, the maximum short term and annual construction period emissions are forecast to occur early enough in the construction period that they should not overlap with the operation of the Unit #1. Additionally, the operating emissions are small in comparison to the construction emissions, so any overlap after the maximum construction period is assumed not to create a new maximum emissions scenario. Therefore, the overlapping emissions and impacts during this overlapping period would be no worse than the worst-case construction impacts. (Ex. 301, pp. C.1-19 to C.1-20.)

5. Cumulative Impacts

Cumulative impacts are defined by CEQA as “two or more individual effects which, when considered together, are considerable or...compound or increase other environmental impacts.” (CEQA Guidelines, § 15355.) A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts.” (CEQA Guidelines, § 15130(a)(1).) Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

The air quality analysis discussed herein is concerned with criteria air pollutants, which have impacts that are usually (though not always) cumulative by nature. Although a project by itself would rarely cause a violation of a federal or state criteria pollutant standard, a new source of pollution may contribute to violations of criteria pollutant standards because of the existing background sources or foreseeable future projects.

The Applicant, in consultation with SCAQMD, confirmed that there are no projects within a six-mile radius of the PSPP site that are under construction or have received permits to be built or operate in the foreseeable future. Therefore, it has been determined that no stationary sources requiring a cumulative modeling analysis exist within a six-mile radius of the proposed project site. However, there are several pending solar and wind projects in the I-10 corridor area between Desert Center and Blythe including two thermal solar projects, the

Blythe Solar Power Project and Genesis Solar Energy Project. This potential for significant additional development within the air basin and corresponding increase in air basin emissions is a major part of Staff's rationale for recommending Conditions of Certification **AQ-SC6** and **AQ-SC7** that are designed to mitigate the proposed project's cumulative impacts by reducing the dedicated on-site vehicle emissions and fugitive dust emissions during site operation. We adopt these recommended mitigation measures, to reduce cumulative air quality impacts to less than significant. (Ex. 301, p. C.1-45.)

Since the proposed project's cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality. (Ex. 301, p. C.1-45.)

6. Compliance with LORS

The project is expected to comply with all relevant federal and state LORS.

The SCAQMD issued a Preliminary Determination of Compliance (PDOC) for the PSPP on March 5, 2010, and later provided public notice with a 30 day comment period starting on April 15, 2010. The District then provided a Revised Determination of Compliance (RDOC) on October 21, 2010, that addressed comments received on the PDOC, and then provided an additional 30-day comment period. The District issued a Final Determination of Compliance (FDOC) on December 1, 2010 after resolving issues raised by the public and agency comments. Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the FDOC. (Ex. 320) The District's DOC conditions are presented in the Conditions of Certification (**AQ-1** to **AQ-51**) which we hereby adopt.

Staff submitted an official PDOC comment letter on March 24, 2010 and the District's RDOC has adequately addressed Staff's comments and Staff had no additional substantive comments on the RDOC.

FINDINGS OF FACT

Based on the persuasive weight of the evidence of record, we find as follows:

1. The proposed Palen Solar Power Project in the Mojave Desert Air Basin and is under the jurisdiction of the South Coast Air Quality Management District.

2. The Riverside County portion of the Mojave Desert Air Basin area is designated as attainment for all federal criteria pollutant standards, and nonattainment for state ozone and PM10 standards.

3. The proposed project, pending receipt of VOC emission reduction credit (ERC) source information sufficient to meet the RDOCs noted project offset requirements, would comply with applicable District Rules and Regulations with the inclusion of the District's RDOC conditions as Conditions of Certification **AQ-1** through **AQ-51.**

4. If left unmitigated, the proposed project's construction activities would likely contribute to significant CEQA adverse PM10 and ozone impacts. Conditions of Certification **AQ-SC1** to **AQ-SC5** would mitigate the potential impacts.

5. The project will not cause new violations of any NO_2, SO_2, PM2.5 or CO ambient air quality standards. Therefore, the NO_X, SO_X, PM2.5 and CO emission impacts are not significant.

6. The proposed project's direct and indirect, or secondary emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are likely CEQA significant if unmitigated. Conditions of Certification **AQ-SC6** would mitigate the onsite maintenance vehicle emissions and **AQ-SC7** would mitigate the operating fugitive dust emissions ensuring that the potential ozone and PM10 CEQA impacts are mitigated to less than significant over the life of the project.

7. Condition of Certification **AQ-SC9** would ensure that the VOC emission reduction credit information, for the VOC offsets required by the District, would be provided to Staff for review.

8. Condition of Certification **AQ-SC10** would ensure that the two auxiliary cooling towers emissions are adequately controlled through the use of a high efficiency mist eliminator and control of the recirculating water total dissolved solids content.

9. The South Coast Air Quality Management issued a Final Determination of Compliance on December 1, 2010, imposing conditions of compliance on project construction and operation to ensure compliance with District Rules and Regulations. These Rules and Regulations are incorporated into the Conditions of Certification below.

10. The record contains an adequate analysis of the project's contributions to cumulative air quality impacts.

11. Implementation of the Conditions of Certification listed below ensures that the PSPP will not result in any significant direct, indirect, or cumulative adverse impacts to air quality.

CONCLUSIONS OF LAW

1. The Commission therefore concludes that with implementation of the Conditions of Certification will ensure that the PSPP will conform with all applicable laws, ordinances, regulations, and standards relating to air quality, as set forth in the pertinent portion of **Appendix A** of this Decision.

2. Implementation of the Conditions of Certification listed below ensures that the PSPP will not result in any significant direct, indirect, or cumulative impacts to air quality.

CONDITIONS OF CERTIFICATION

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 Conditions of Certification **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 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the 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 Conditions of Certification **AQ-SC3**, **AQ-SC4,** and **AQ-SC5**.

Verification: At least 30 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The AQCMP shall include effectiveness and environmental data for the proposed soil

stabilizer. The CPM will notify the project owner of any necessary modifications to the plan within 15 days from the date of receipt.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site. The following fugitive dust mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**, and any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval.

a. The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved or treated prior to taking initial deliveries.

b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a 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 to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading (consistent with **Biology** Conditions of Certification that address the minimization of standing water); 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 Condition of Certification **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.

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 one foot of freeboard.

n. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks

installed to comply with this Condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include the following to demonstrate control of fugitive dust emissions:

A. a summary of all actions taken to maintain compliance with this Condition;

B. copies of any complaints filed with the District in relation to project construction; and

C. any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this Condition. Such information may be provided via electronic format or disk at the project owner's discretion.

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 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 before that time.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include:

A. a summary of all actions taken to maintain compliance with this Condition;

B. copies of any complaints filed with the District in relation to project construction; and

C. any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this Condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. The following off-road diesel construction equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**, and any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval.

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 10 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.

Verification: The AQCMM shall include in the Monthly Compliance Report the following to demonstrate control of diesel construction-related emissions:

A. A summary of all actions taken to control diesel construction related emissions;

B. A list of all heavy equipment used 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.

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the latest model year available when obtained.

Verification: At least 30 days prior to the start commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the 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 **AQ-SC3** that would be applicable to minimizing fugitive dust emission creation from operation and maintenance activities and preventing all fugitive dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site; 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 as efficient as or more efficient for fugitive dust control than ARB approved soil stabilizers, and that

shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control.

The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of Condition **AQ-SC4**. The measures and performance requirements of **AQ-SC4** shall also be included in the operations dust control plan.

Verification: At least 30 days prior to start of commercial operation, the project owner shall submit to the CPM for review and approval a copy of the site Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer, that will be used during operation of the project and that identifies all locations of the speed limit signs. Within 60 days after commercial operation, the project owner shall provide to the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits.

AQ-SC8 The project owner shall provide the CPM copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) documents for the facility.

The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project federal air permit. The project owner shall submit to the CPM any modification to any federal air permit proposed by the District or U.S. Environmental Protection Agency (U.S. EPA), and any revised federal air permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any ATC, PTO, and proposed federal air permit modifications to the CPM within 5 working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified ATC/PTO documents and all federal air permits to the CPM within 15 days of receipt.

AQ-SC9 The project owner shall provide a list of the proposed VOC emission reduction credit (ERC) sources that total at least 68 pounds per day, shall submit requests to modify this list, and shall submit documentation confirming that the ERCs have been surrendered as required by South Coast Air Quality Management District rules.

Verification: The project owner shall provide to the CPM the following:

A. The list of proposed emission reduction credit sources, with the amount of reduction, the location of reduction, the method of reduction and date of reduction prior to initiating construction.

B. Documentation prior to the start of operation that demonstrates the emission reduction credits have been surrendered in a manner and timeframe that complies with district rules.

C. Any requests to modify the list of emission reduction credits shall be provided no later than at least 30 days prior to their surrender.

AQ-SC10 The project owner shall operate the cooling towers with high efficiency mist eliminators and shall determine and report water quality and annual emissions.

Verification: The project owner shall provide the following at least 30 days prior to installation of the cooling tower to the CPM for review and approval:

A. The manufacturer specifications for the cooling tower, that provides the number of cells and design recirculating water flow rate for the two cooling towers.

B. The manufacturer specifications for the mist eliminators that provide a manufacturer guarantee that the mist eliminators will reduce drift to no more than 0.0005 percent of recirculating water flow.

The project owner shall provide the following in the Annual Compliance Reports:

C. The sampling data for the recirculating water TDS concentration, performed at least quarterly, that demonstrates that the annual average TDS concentration was no more than 2,000 milligrams per liter (ppmw).

D. The estimated annual particulate emissions from the cooling tower using the following equation: (annual gallons of water recirculated) x (0.000005 fraction mist) x (average annual TDS concentration in mg/l) / (1,000,000) x (8.34 lbs/gallon).

Staff Condition for Project Alternatives

AQ-SC11 The project owner shall use one of the following four options to assure that the operation of the emergency engines will not cause an exceedance of the state or federal 1-hour NO_2 ambient air quality standards:

1) The project owner shall provide an air dispersion modeling analysis that demonstrates to Staff's satisfaction that the currently proposed or officially revised worst-case operating emissions would not have the potential to cause exceedances of the state or federal 1-hour NO_2 ambient air quality standards, or

2) The project owner shall procure emergency generator engines that meet ARB Tier 4 standards for NOx emissions (0.5 grams per brake horsepower), or

3) In the event that Tier 4 engines are not available at the time of engine purchase, the project owner shall; a) provide documentation from engine manufacturers that Tier 4 engines

are not available; and b) procure emergency engines that have a NOx emissions guarantee of no more than 2.6 grams per brake horsepower, or

4) The project owner shall agree to limit the emergency generator engine testing duration to no more than 30 minutes per event and a testing frequency limited to the minimum required by engine manufacturer.

In no event shall the project owner propose the use of an emergency engine that does not meet the most strict applicable federal or state engine emission limit regulation without a signed waiver from U.S. EPA or ARB as appropriate. The project owner shall justify the date of engine purchase.

Verification: The project owner shall provide to the CPM the air dispersion modeling analysis, if performed, that demonstrates compliance with Part 1) of this Condition at least 30 days prior to purchasing the emergency engine generators for this project, or shall provide documentation to the CPM at least five days prior to purchasing the engine generators that demonstrates how they would comply with Part 2), or Part 3), or Part 4) of this Condition.

AQ-SC12 For the aboveground gasoline storage tank, the project owner shall comply with South Coast Air Quality Management District Rule 461 and Air Resources Board Executive Orders (EOs) otherwise applicable to storage tanks larger than 250 gallons and-shall:

a. Ensure that the above ground gasoline storage tank installed is no larger than 250 gallons in storage capacity and that the tank and associated fuel dispensing unit is equipped with appropriate Phase I and Phase II ARB vapor recovery systems otherwise applicable under District Rule 461 to storage tanks larger than 250 gallons at the time of installation.

b. Maintain onsite a list of the SCAQMD Rule 461 and ARB EO design, testing, and other requirements applicable at the time of purchase to storage tanks larger than 250 gallons, including vapor recovery system.

c. Maintain onsite a log of all inspections, repairs, tests, and maintenance on equipment subject to the requirements specified in part (b) above. Such logs or records shall be maintained at the facility for at least two (2) years and available upon request.

Verification: No later than 30 days prior to purchasing the above ground storage tank and its components, the project owner shall provide to the CPM for approval the final tank and vapor recovery system design specifications and a list of applicable Rule 461 and EO design, testing, and other requirements, including

specifications for the vapor recovery equipment. The project owner shall also provide gasoline throughput records in the Annual Compliance Report and shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

C.1.15.2 DISTRICT CONDITIONS
District Revised Determination of Compliance Conditions (SCAQMD 2010c)

Standard Conditions **AQ-1** and **AQ-2** apply to all permitted equipment.

AQ-1 Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-2 This equipment shall be properly maintained and kept in good operating condition at all times.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Application No. 506828 and 506834 (Two 35 MMBtu/hr LPG-fired Auxiliary Boilers)

EQUIPMENT DESCRIPTION:

Boiler, Auxilliary Steam, Nebraska, Model NB-201D-45-SH, 35 MMBTU/HR, Water Tube, Propane Fired, 29,000 LB/HR Steam At 165 PSIG, 480 Degrees Fahrenheit, Equipped With A Cb Natcom, Model No. P-37-G-22-1117 Ultra-Low NOx Rapid Mix Burner.

AQ-3 This equipment shall be fired exclusively with liquefied petroleum gas (LPG) which meets the requirements of AQMD Rule 431.1 and the standards specified in CCR Title 13, Section 2292.6 for California motor vehicles.

Verification: The project owner shall maintain records of the LPG deliveries and specifications onsite for a period of three years and shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-4 The project owner shall conduct an initial source test(s) for the pollutant(s) identified below.

Pollutant to be Tested	Required Test Method(s)	Averaging Time	Test Location
NOx emissions	District Method 100.1	1 hour	Stack
CO emissions	District Method 100.1	1 hour	Stack
SOx emissions	Approved District method	District approved averaging time	Fuel Sample
VOC emissions	Approved District method	1 hour	Stack
PM10 emissions	Approved District method	District approved averaging time	Stack

The test shall be conducted after AQMD approval of the source test protocol, but no later than 180 days after initial start-up. The AQMD shall be notified of the date and time of the test at least 10 days prior to the test. The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (gallons/hour), and the flue gas flow rate.

The test shall be conducted in accordance with AQMD approved test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before the test commences. The test protocol shall include the proposed operating conditions of the boiler during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The test shall be conducted when this equipment is operating at maximum-and minimum loads.

Verification: The project owner shall provide a source test protocol to the District for approval and CPM for review at least 45 days prior to the first source test. The project owner shall notify the District and the CPM within 10 working days before the execution of the source test required in this Condition. The test shall be conducted within 180 days after initial start-up and the test results shall be submitted to the District and to the CPM within 60 days after test was conducted.

AQ-5 The project owner shall limit the fuel usage to no more than 698,087 gallons in any one year. For the purpose of this Condition, one year shall be defined as a period of 12 consecutive months determined on a rolling basis with a new 12-month period beginning on the first day of each calendar month.

For the purpose of this Condition, fuel usage shall be defined as the total propane usage of a single boiler. The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this Condition.

Verification: The project owner shall submit records required by this Condition in the Annual Compliance Report, including the monthly start and end readings of the fuel flow meter (**AQ-7**).

AQ-6 The project owner shall limit the fuel usage to no more than 58,174 gallons in any one month. For the purpose of this Condition, fuel usage shall be defined as the total propane usage of a single boiler. The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this Condition.

Verification: The project owner shall submit to the CPM the record of boiler fuel usage demonstrating compliance with this Condition as part of the Annual Compliance Report.

AQ-7 The project owner shall install and maintain a(n) flow meter to accurately indicate the fuel usage being supplied to the boiler. The project owner shall also install and maintain a device to continuously record the parameter being measured.

Verification: At least 30 days prior to the installation of the boiler, the project owner shall provide the District and the CPM the specification of the flow meter.

AQ-8 The project owner shall provide to the AQMD a source test report in accordance with the following specifications:

- Source test results shall be submitted to the AQMD no later than 60 days after the source test was conducted.
- Emission data shall be expressed in terms of concentration (ppmv) corrected to three percent oxygen (dry basis), mass rate (lb/hr), and lb/MMCF. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains/DSCF.
- All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).
- All moisture concentration shall be expressed in terms of percent corrected to three percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, fuel flow rate (gallons per hour), and the flue gas temperature.

Verification: None required.

AQ-9 The NOx emissions from this equipment shall not exceed 9 ppmv, measured over 60 minute averaging time period at three percent O_2.

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the boiler operating emission rates.

AQ-10 The CO emissions from this equipment shall not exceed 50 ppmv, measured over 60 minute averaging time period at three percent O_2.

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the boiler operating emission rates.

AQ-11 The 9 PPM NOx emission limits shall not apply during start-up and shutdown periods. Start-up and shutdown periods each shall not exceed 15 minutes. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-12 The 50 PPM CO emission limits shall not apply during start-up and shutdown periods. Start-up and shutdown periods each shall not exceed 15 minutes. Written records of start-ups and shutdowns shall be maintained and made available upon request from the Executive Officer.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-13 The project owner shall limit emissions from this equipment as follows:

Contaminant	Emission Limit
PM-10	639 lbs in any one year
NOx	709 lbs in any one year
SOx	722 lbs in any one year

The project owner shall calculate the yearly emissions for NOx, PM10 and SOx using the equation below and the following emission factors: NOx: 1.02 lb/1,000 gal; PM10: 0.92 lb/1,000 gal; and SOx:1.03 lb/1,000 gal.

Yearly Emissions, lb/year = X (E.F.)

where X = yearly fuel usage in 1,000 gal/year and

E.F. = emission factor indicated above.

For the purpose of this Condition, the yearly emission limit shall be

defined as a period of 12 consecutive months determined on a rolling basis with a new 12-month period beginning on the first day of each calendar month.

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the boiler operating emission rates**.**

AQ-14 The project owner shall limit emissions from this equipment as follows:

Contaminant	Emission Limit
PM10	53 lbs in any one month
NOx	59 lbs in any one month
SOx	60 lbs in any one month
VOC	27 lbs in any one month

The project owner shall calculate the monthly emissions for NOx, VOC, PM10 and SOx using the equation below and the following emission factors: NOx: 1.02 lb/1,000 gal; VOC: 0.46 lb/1,000 gal; PM10: 0.92 lb/1,000 gal; and SOx: 1.03 lb/1,000 gal.

Monthly Emissions, lb/month = X (E.F.)

where X = monthly fuel usage in 1,000 gal/month and

E.F. = emission factor indicated above.

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the boiler operating emission rates.

AQ-15 The project owner shall limit the annual operation of this equipment to no greater than 5,110 hours in any one year.

Verification: The project owner shall submit to the CPM the boiler hours of use records demonstrating compliance with this Condition as part of the Annual Compliance Report.

AQ-16 The boiler shall not be operated at loads of less than 25 percent except during initial start-up and shutdown.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

APPLICATION NO. 506831 AND 506836 (TWO EMERGENCY FIRE PUMP ENGINES)

EQUIPMENT DESCRIPTION:

Internal Combustion Engine, Emergency, 300 BHP, Diesel Fueled, Caterpillar, Model No. 9CPXL08.8ESK, Lean Burn, Four Cycle, Turbocharged And Aftercooled, Driving A Fire Pump.

AQ-17 The project owner shall install and maintain a non-resettable totalizing fuel meter to accurately indicate the fuel usage of the engine.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the fuel meter.

AQ-18 The project owner shall only use diesel fuel containing sulfur less than or equal to 15 ppm by weight.

Verification: The project owner shall make the site available for inspection of equipment and fuel purchase records by representatives of the District, ARB, and the Energy Commission.

AQ-19 This equipment shall comply with Rule 431.2 and 1470.

Verification: At least 30 days prior to purchasing the engines the project owner shall submit the engine specifications for review and approval demonstrating that the engines meet NSPS and ARB ATCM emission limit requirements at the time of engine purchase, and also meets the emission limit requirements of Rule 1470. The project owner shall submit records demonstrating compliance with the engine use and sulfur content limitations of Conditions **AQ-21** and **AQ-18** in the Annual Compliance Report, including a photograph showing the annual reading of engine hours.

AQ-20 An operational non-resettable totalizing time meter shall be installed and maintained to indicate the engine elapsed operating time.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the hour meter.

AQ-21 This engine shall not be operated more than 200 hours in any one year, which includes no more than 50 hours per year and one hour per week for maintenance and testing as required in Rule 1470(c)(2).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-22 The project owner shall keep a log of engine operations documenting the total time the engine is operated each month and the specific reason for operation as:

a. Emergency use

b. Maintenance and testing

c. Other (be specific)

In addition, for each time the engine is manually started, the log shall include the date of engine operation, the specific reason for operation, and the totalizing hour meter reading (in hours and tenths of hours) at the beginning and the end of the operation. On or before January 15 of each year, the project owner shall record in the engine operating log:

a. The total hours of engine operation for the previous calendar year, and

b. The total hours of engine operation for maintenance and testing for the previous calendar year

Engine operation log(s) shall be retained on site for a minimum of three calendar years and shall be made available to the Executive Officer or representative upon request.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-23 This equipment shall comply with the following BACT emission limits.

Contaminant	Emission Limit (gm/bhp-hr)
NOx + VOC	3.0
CO	2.6
PM10	0.15

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the fire pump engine operating emission rates.

APPLICATION NOS. 508665 AND 508667 (TWO EMERGENCY ELECTRICAL GENERATOR ENGINES)

EQUIPMENT DESCRIPTION:

Internal Combustion Engine, Emergency, 2,922 BHP, Cummins, Diesel Fueled, Lean Burn, Four Cycle, Model No. QSK60-G6, Turbocharged and Aftercooled, Driving an Electrical Generator Rated at 2.18 MW.

AQ-24 The project owner shall install and maintain a(n) non-resettable totalizing fuel meter to accurately indicate the fuel usage of the engine.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the fuel meter.

AQ-25 This equipment shall comply with Rule 431.2 and 1470.

Verification: At least 30 days prior to purchasing the engines the project owner shall submit the engine specifications for review and approval demonstrating that the engines meet NSPS and ARB ATCM emission limit requirements at the time of engine purchase, and also meets the emission limit requirements of Rule 1470. The project owner shall submit records demonstrating compliance with the engine use and sulfur content limitations of Conditions **AQ-21** and **AQ-18** in the Annual Compliance Report, including a photograph showing the annual reading of engine hours.

AQ-26 An operational non-resettable totalizing time meter shall be installed and maintained to indicate the engine elapsed operating time.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the hour meter.

AQ-27 This engine shall not be operated more than 200 hours in any one year, which includes no more than 50 hours per year and one hour per week for maintenance and testing as required in Rule 1470(c)(2).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-28 Operation beyond the allotted time for engine maintenance and testing shall be allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage, provided that the utility distribution company has ordered rotating outages in the control area where the engine is located or has indicated that it expects to issue such an order at a certain time, and the engine is located in a utility service block that is subject to the rotating outage. Engine operation shall be terminated immediately after the utility distribution company advises that a rotating outage is no longer imminent or in effect.

Verification: The project owner shall submit to the CPM the specific reason for operation of the emergency generator engine as part of the Annual Compliance Report, and the project owner shall submit to the CPM the hours of emergency generator engine operation as part of the Annual Compliance Report.

AQ-29 This engine shall not be used as part of an interruptible service contract in which a facility receives a payment or reduced rates in

return for reducing electric load on the grid when requested by the utility or the grid operator.

Verification: The project owner shall submit to the CPM the specific reason for operation of the emergency generator engine as part of the Annual Compliance Report, and the project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-30 The project owner shall keep a log of engine operations documenting the total time the engine is operated each month and the specific reason for operation as:

a. Emergency use

b. Maintenance and testing

c. Other (be specific)

In addition, for each time the engine is manually started, the log shall include the date of engine operation, the specific reason for operation, and the totalizing hour meter reading (in hours and tenths of hours) at the beginning and the end of the operation. On or before January 15 of each year, the project owner shall record in the engine operating log:

a. The total hours of engine operation for the previous calendar year, and

b. The total hours of engine operation for maintenance and testing for the previous calendar year

Engine operation log(s) shall be retained on site for a minimum of three calendar years and shall be made available to the Executive Officer or representative upon request.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-31 This equipment shall comply with the following BACT emission limits.

Contaminant	Emission Limit (gm/bhp-hr)
NOx + VOC	4.8
CO	2.6
PM10	0.15

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with the emergency generator engine operating emission rates.

APPLICATION NO. 506829 AND 506833 (SOLAR THERMAL POWER SYSTEMS)

EQUIPMENT DESCRIPTION:

Solar thermal power generating system no. 1 and 2, each consisting of:

1. Solar parabolic mirrors
2. One ullage system, consisting of distillation columns and pressure vessels vented to activated carbon adsorption system no. 1 and 2 described by a/n 506830 and 506835
3. Eight expansion vessels, each with a capacity of 151,915 gallons, vented to activated carbon adsorption system no. 1 and 2 described by a/n 506830 and 506835
4. Heat transfer fluid (HTF) piping
5. Steam turbine
6. Electrical generator, 250 MW

AQ-32 The HTF expansion vessels shall be vented to the activated carbon adsorption system no. 1 and no. 2, which is in full operation and which has been issued permits to construct under a/n 506830 and 506835, respectively.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-33 The project owner shall develop and implement a comprehensive inspection and maintenance (I&M) program to determine, repair or replace, and report leaks in the HTF piping network and expansion vessels. Such I&M program shall be submitted to the Executive Officer for approval no later than 180 days from the issuance of a permit to construct for this equipment. I&M program records and as well as any related records shall be kept on file for a period of three years and be made available to the Executive Officer upon request.

In addition, the project owner shall submit a protocol to the Executive Officer within the first 60 days of full operation describing the methodology to be used to perform the following tasks:

a. All pumps connectors, and pressure relief valves (PRVs) and associated rupture disks shall be electronically, visually or by audio, inspected once every operating day.

b. All accessible valves, connectors, and PRV's (including rupture disks) shall be inspected quarterly using an AQMD Rule 1173 approved leak detection device calibrated for methane.

c. VOC leaks greater than 100 ppmv shall be recorded and repaired or replaced within seven days of detection.

d. VOC leaks greater than 10,000 ppmv shall be recorded and repaired or replaced within 24 hours of detection.

e. The project owner shall maintain written records of all VOC leaks exceeding 100 ppmv. The records shall indicate the location of the leak, the type of leak, and the repair(s) or replacement made. The records shall be kept on file for a period of three years and shall be made available to the Executive Officer upon request,

f. Pressure-sensing equipment shall be installed and operated which will be capable of detecting a major leak, rupture or spill within the HTF network.

Verification: The project owner shall submit copies of the I&M program plan and protocol to the CPM for review at the same time when they submitted, in compliance with the timeframe requirements of this Condition, to the District for approval. The project owner shall submit information demonstrating compliance with the substantive and recordkeeping provisions of this Condition during facility operation in the Annual Compliance Report.

AQ-34 The project owner shall maintain written records of the amount of heat transfer fluid (HTF) replaced on a monthly basis. Such records shall be kept on file for a period of three years and shall be made available to the Executive Officer upon request.

Verification: The project owner shall provide the amount of heat transfer fluid (HTF) replaced each year in the Annual Compliance Report. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-35 The following component count shall be used to determine the fugitive VOC emissions.

Equipment	Count (per unit)
Valves	1,969
Pump Seals	9
Connectors	2,091

The project owner shall provide AQMD with a final component count within 90 days of completion of construction.

Verification: The project owner shall provide the District and the CPM the final HTF piping component count within 90 days of completion of construction, and shall keep a record of changes in the component count in the inspection and maintenance program documentation kept at the site.

AQ-36 All expansion vessels shall be kept closed except during maintenance, inspection, repair or replacement.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-37 This equipment shall be maintained and operated according to manufacturer's specification to ensure compliance with applicable AQMD, state, and federal rules and regulations.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-38 Written records shall be used to demonstrate compliance with all applicable AQMD, state, or federal rules and regulations, including records of any incidental or supporting operational data needed to justify findings.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-39 The emissions from the ullage system, including all fugitives, shall not exceed the following limits:

Compound	Emission Limits (per unit)	
	lbs/month	tons/year
Volatile Organic Compounds (VOC)	824.40	4.95

Compliance with the maximum monthly emission limit shall be verified by the project owner each month the source is operated. Compliance with the maximum monthly emission limit shall be verified using appropriate operational data and recordkeeping to fully document the maximum monthly emission rate. Written records of such documentation of compliance shall be retained for a period of three years and made available to the Executive Officer upon request.

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this Condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-40 The expansion tank shall only be vented to the atmosphere through the carbon adsorption system issued a permit to construct under a/n 506830 (506835). In no event shall the ullage system be operated for more than 400 hours in any one year. The project owner shall maintain written records of elapsed operational time of the ullage system and such records shall be made available to the Executive Officer upon request.

Verification: As part of the Annual Compliance Report the project owner shall include information on operating hours of the ullage system to demonstrate compliance with this Condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-41 The project owner shall ensure that all pressure relief valves (PRVs) which vent to the atmosphere shall are equipped with rupture disks.

Verification: The project owner shall make the site available for inspection of equipment by representatives of the District, ARB, and the Energy Commission.

AQ-42 The project owner shall monitor and test the heat transfer fluid (HTF) on a quarterly basis for HTF contamination in accordance with the procedures outlined in the Therminol analytical evaluation guidelines provided by the manufacturer. The ullage system shall be operated whenever the percentage of total contaminants in the HTF sample reaches a maximum of two percent by volume.

Verification: As part of the Annual Compliance Report the project owner shall include a summary of the quarterly HTF test results required by this Condition and a corresponding summary of the periods of HTF ullage system venting operation to show compliance with this Condition.

APPLICATION NO. 506827 (BIO-REMEDIATION (LAND TREATMENT) UNIT)

EQUIPMENT DESCRIPTION:

Soil bio-remediation (land treatment) unit, consisting of:

1. Bio-remediation aldn farm, length: 800 feet; width 200 feet
2. Irrigation system for bio-remediation operations
3. Bio-remediation fertilizer and associated compounds

AQ-43 The project owner shall measure VOC emissions three-inches above the soil surface on a weekly basis using a flame ionization detector (FID) or photo-ionization detector (PID) or other device approved by the Executive Officer. The project owner shall maintain written records of weekly VOC emissions from the bio-remediation unit during periods when the unit is in operation. The project owner shall submit a written protocol to the Executive Officer to incorporate the proposed monitoring, reporting and recordkeeping requirements for the bio-remediation unit to be reviewed and approved by AQMD staff prior to initial operation of the bio-remediation unit.

a. During operation, if the soil in the bio-remediation unit results in a VOC reading of more than 50 ppmv calibrated as methane and measured 3 inches above the soil surface with a PID, FID, or other AQMD approved device, the bio-remediation unit shall be covered with a minimum of 10-mil plastic sheeting to control VOC emissions.

b. If the soil in the bio-remediation unit registers an organic matter concentration of less than 1,000 ppmw the project owner shall use naturally occurring soil bacteria or enhanced bioremediation procedures to treat the HTF contaminated soil. During operations, the bioremediation unit shall be covered with a minimum of 10-mil plastic sheeting to control VOC emissions.

c. If the soil in the bio-remediation unit registers an organic matter concentration of greater than or equal to 1,000 ppmw and but less than or equal to 10,000 ppmw, the project owner shall use enhanced bio-remediation procedures to treat the HTF contaminated soil using accepted environmental engineering practices. Soil stockpiles shall be conditioned as necessary through the addition of nutrients, moisture, and air, to maintain conditions suitable for bio-remediation operations

d. If the soil in the bio-remediation unit registers a VOC reading of greater than 10,000 ppmw, the project owner shall store the

contaminated soil in sealed containers while onsite. The project owner shall dispose of the HTF contaminated soil at an off-site facility suitable for disposal of such materials.

e. If the bio-remediation operation is not effective after six months of continuous operation, the project owner shall submit another written protocol to propose an alternate method of soil remediation for approval by the Executive Officer.

Verification: The project owner shall provide a written protocol to incorporate the proposed monitoring, reporting and recordkeeping requirements to the District for approval and CPM for review prior to initial operation of the bio-remediation unit, and shall provide the CPM a summary of the monitoring results and other actions taken to comply with this Condition in the Annual Compliance Report.

AQ-44 Written records shall be used to demonstrate compliance with all applicable AQMD, state, or federal rules and regulations, including records of any incidental or supporting operational data needed to justify findings.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-45 The project owner shall submit a VOC-contaminated soil handling plan in accordance with AQMD Rule 1166 to the Executive Officer for approval no later than 180 days from the issuance of a permit to construct for this equipment.

Verification: The project owner shall provide a VOC-contaminated soil handling plan to the District for approval and CPM for review within 180 days of the issuance of a permit to construct.

APPLICATION NO. 506830 AND 506835 (AIR POLLUTION CONTROL SYSTEMS (ACTIVATED CARBON ADSORPTION SYSTEM)

EQUIPMENT DESCRIPTION:

Activated carbon adsorption system no. 1 and 2, each with two canisters in series, total capacity 4,000 pounds, venting eight expansion vessels and one ullage system described by a/n 506829 and 506833.

AQ-46 The project owner shall monitor for breakthrough between the first and second carbon beds while the carbon system is in use using an OVA or other monitoring device as approved by the Executive Officer. Breakthrough shall occur when the OVA or other approved monitoring device shows a VOC concentration of 5 ppmv or greater, measured as methane, downstream of the first carbon bed. The carbon in the first bed shall be replaced with fresh carbon at least five times per month as necessary or at the occurrence of breakthrough,

whichever comes first, prior to occurrence of breakthrough in the second carbon bed.

Verification: The project owner shall provide a summary of the carbon bed monitoring data as part of the Annual Compliance Report and shall submit tests to the District as required in this Condition.

AQ-47 The project owner shall at any given time period, maintain at least 10 extra carbon adsorption canisters on the premises to ensure that the activated carbon adsorption systems can continuously operate without interruption whenever the ullage system is in operation.

Verification: The project owner shall make the site available for inspection of equipment by representatives of the District, ARB, and the Energy Commission.

AQ-48 The project owner shall install a non-resettable, totalizing elapsed time meter to accurately indicate the cumulative operational time, in hours, of the activated carbon adsorption system.

Verification: At least 30 days prior to the installation of the carbon adsorption system, the project owner shall provide the District and the CPM the specification of the totalizing elapsed time meter.

AQ-49 An initial source test plan/protocol shall be submitted to the Executive Officer 60 days prior to the test and shall be approved before the test begins. The plan shall include the proposed operating conditions of the of the equipment during the test, the test methods, the identity of the testing laboratory, a statement from the testing laboratory certifying that it meets the no conflict requirements of the AQMD and a description of all sampling and analytical procedures to be used.

Verification: The project owner shall provide an initial source test plan to the District for approval and CPM for review at least 60 days prior to the test.

AQ-50 The initial source test shall be performed within 60 days after full operation but no later than 180 days after the initial start-up of the equipment.

Verification: The project owner shall notify the District and the CPM at least 15 days before the execution of the compliance test required in this Condition.

AQ-51 A written report of the source test results shall be submitted to the Executive Officer within 60 days after the test is completed and shall contain, at a minimum, the VOC concentration, in ppm, at the inlet to the first carbon bed, between the first and second carbon bed, and at the outlet from the second bed, speciated for benzene. The test report shall include the overall control efficiency for the carbon adsorption system.

Verification: A summary of the source test results shall be submitted to the CPM within 60 days, or at the same time as the full test report is submitted to the District if later and allowed by the District, after source test completion.

C. PUBLIC HEALTH

The public health analysis supplements the previous discussion on air quality and considers the potential public health effects from project emissions of toxic air contaminants (TACs). We review here the evidence concerning whether such emissions will result in significant public health impacts or violate standards for public health protection.[1]

SUMMARY AND DISCUSSION OF THE EVIDENCE

Project construction and operation will result in routine emissions of toxic air contaminants for which no ambient air quality standards have been established. These substances are categorized as noncriteria pollutants. In the absence of standards, state and federal regulatory agencies have developed health risk assessment procedures to evaluate potential health effects due to these toxic air contaminants. (Ex. 301, p. C.5-3.)

The risk assessment consists of the following steps:

- Identify the types and amounts of hazardous substances that the Palen Solar Power Project (PSPP) could emit into the environment;
- Estimate worst-case concentrations of project emissions in the environment using dispersion modeling;
- Estimate amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
- Characterize potential health risks by comparing worst-case exposure to the project with the scientific safety standards based on known health effects. (Ex. 301, p. C.5-3.)

Typically, the initial health risk analysis is performed at a "screening level," which is designed to estimate potential health risks.[2] The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case,

[1] This Decision discusses other potential public health concerns under various topics. For instance, impacts from emissions of criteria pollutants are treated in the **Air Quality** section. The accidental release of hazardous materials is addressed in **Hazardous Materials Management**. Electromagnetic fields are covered in **Transmission Line Safety and Nuisance**. Potential impacts to soils and surface water sources are considered in the **Soil and Water Resources** section. Potential exposure to contaminated soils and hazardous wastes is described in **Waste Management**. (Ex. 301, pp. C.5-1 - 5-2.)

[2] The evidence shows that this risk analysis overstates actual health risks (Ex. 301, pp. C.5-3, C.5-6.)

risks and then modeling those conditions to analyze results. Such conditions include:

- Using the highest levels of pollutants that could be emitted from the power plant;
- 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). (Ex. 301, pp. C.5-3 - C.5-4.)

The risk assessment for the PSPP addresses two categories of potential health impacts: chronic (long-term) noncancer effects; and cancer risk (also long-term).[3] Chronic non-cancer health effects occur as a result of long-term exposure (8 to 70 years) to lower concentrations of pollutants. For carcinogenic substances, the health assessment considers the total risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over a 70-year lifetime. (Ex. 301, p. C.5-4.)

The analysis for noncancer chronic health effects compares the maximum project contaminant levels to safe levels called Reference Exposure Levels or RELs. These exposure levels are designed to protect the most sensitive individuals in the population such as infants, the elderly, and people suffering from illnesses or diseases which make them more susceptible to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effects reported in medical and toxicological literature, and include margins of safety. (Ex. 301, p. C.5-4.) A "hazard index" of less than 1.0 signifies that the worst-case exposure is less than the safe exposure level, and thus there are not likely to be adverse noncancer health effects. (Ex. 301, p. C.5-5.)

The assessment also considers risk from all cancer-causing chemicals from the project's emissions. The calculated risk is not meant to predict the actual

[3] The only TAC emitted from this project is diesel particulate from emergency diesel-fueled engines. Only long-term health effects have been established for this TAC. (Ex. 301, p. C.5-4.)

expected incidence of cancer, but is rather a theoretical estimate 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, and the length of the exposure period. The State of California has determined 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." [Cal. Code Regs., tit. 22, § 12703(b).] This risk level is equivalent to a cancer risk of 10 in one million, or $10x10^{-6}$. The conservative nature of the screening assumptions means that actual cancer risks due to project emissions are likely to be considerably lower than those estimated. (Ex. 301, pp. C.5-5 - C.5-6.)

If the screening analysis predicts no significant risks, then no further analysis is required. However, if the predicted risk is significant, then further analysis using more realistic, site-specific assumptions is performed to obtain a more accurate assessment of potential health risks. If the site-specific analysis confirms that the risk exceeds the significance level, then appropriate mitigation measures are necessary to reduce the risk to less than significant. The evidence explains that if a refined analysis identifies a cancer risk that exceeds the significance level after all risk reduction measures have been considered, Commission staff would not recommend approval of the project. (Ex. 301, p. C.5-6.)

The evidence further shows that both the Applicant and Staff independently performed screening level risk assessments and concluded that no adverse health effects are expected from project construction or operation.

1. Construction Impacts and Mitigation

Construction of PSPP is expected to take place over a period of 39 months. Potential construction phase health impacts could occur from exposure to toxic substances in contaminated soil disturbed during site preparation, diesel exhaust from heavy equipment, and emissions from the proposed concrete batch plant and fuel depot. (Ex. 301, pp. C.5-10 - C.5-11.)

The evidence shows that Applicant modeled worst-case construction emissions, including fugitive dust and diesel particulate matter (DPM). The Applicant estimated that 33,058 pounds of DPM would be emitted during the entire construction period of about 3.3 years. In order to model the cancer risk from construction emissions, the Applicant divided the total amount of DPM by the exposure period of 70 years which is typically used to assess health risks. The

Applicant's modeling of worst-case construction emissions (using a 100-meter spacing receptor grid) found that the cancer risk was estimated to be 3.3 in 1 million at the point of maximum impact (PMI), below the level of significance of 10 in 1 million. The chronic hazard index was found to be 0.0021 at the PMI, below the level of significance of 1.0. The PMI was located along the northern site boundary in a remote area that is part of the project right-of-way and not frequently accessed by the public. (Ex. 301, p. C.5-11, C.5-16.) Moreover, the evidence establishes that emissions from the fuel depot and the batch plant will be minimal, and not significantly change these risks. (Ex. 301, p. C.5-11.)

Even though the Applicant and Staff independently determined that the construction impacts would be less than significant, they both proposed mitigation measures to reduce the maximum calculated PM10 and PM2.5 emissions and further reduce any potential impacts. Included in these measures are requirements for use of fugitive dust and diesel exhaust control measures such as the use of ultra-low sulfur diesel fuel and the installation of an oxidation catalyst and soot filters on diesel equipment. (*Id*.) We have adopted the recommended mitigation measures in the **Air Quality** section of this Decision.

2. Operation Impacts and Mitigation

The PSPP's operational emissions sources include two propane-fired auxiliary boilers, two small wet cooling towers used for ancillary equipment, two diesel-fueled emergency generators, two diesel-fueled emergency fire pumps, two HTF expansion/ullage systems, and DPM from maintenance vehicles. (Ex. 301, p. C.5-12.) The evidence specifies and quantifies these emissions, and it also identifies the types of health effects which could occur. (Ex. 301, pp. C.5-12 - C.5-20.)

The record includes the methodology used in identifying and quantifying the emission rates of the toxic noncriteria pollutants that could adversely affect public health. Applicant performed atmospheric dispersion modeling of facility emissions which included all emission sources.[4] Staff performed its own independent risk analysis (Ex. 301, pp. C.5-14 to C.5-20.) Table 1, below, shows the results of these two analyses:

[4] These are specified in Exhibit 200, p. C.5-17.

Public Health Table 1

Cancer Risk and Chronic Hazard Due to Operation Phase Emissions

	Staff's Analysis *Includes assessment of risk and hazard due to Diesel Particulate Matter from onsite mobile sources during project operations*			**Applicant's Analysis** *Does not include assessment of risk and hazard due to Diesel Particulate Matter from onsite mobile sources during project operations*		
	Cancer Risk (per million)	**Acute HI**	**Chronic HI**	**Cancer Risk (per million)**	**Acute HI**	**Chronic HI**
PMI (for cancer risk and chronic HI, Rec #372)	7.8	0.11	0.0042	1.35	0.11*	0.00076
MEIR (Rec. #1)	1.9	0.026	0.011	0.11	0.026	0.000056

Cancer PMI (point of maximum impact, Rec. #372) is located on the northern fence line.

** At Rec #375*

Source: Exhibit 301, p. C.5-18

Thus, the evidence uniformly indicates that acute and chronic hazard risks from project operations are below the significance level of 1.0, and that the cancer risk from project operations is below the significance level of 10 in 1,000,000. (Ex. 301, p. C.5-16.)

Each power block will also have one small cooling tower to cool auxiliary equipment. These cooling towers pose the risk of Legionella. This is a bacterium that is ubiquitous in natural aquatic environments and widely distributed in manmade water systems. It is the principal cause of legionellosis, more commonly known as Legionnaires' disease. Untreated or inadequately treated cooling systems, such as industrial cooling towers and building heating, ventilating, and air conditioning systems have been associated with outbreaks of legionellosis. (Ex. 301, pp. C.5-19 - C.5-20.)

Effective mitigation measures include a cleaning and maintenance program. The Cooling Tower Institute has issued guidelines for the best practices for control of Legionella. Preventive maintenance includes effective drift eliminators, periodically cleaning the system as appropriate, maintaining mechanical components, and maintaining an effective water treatment program with appropriate biocide concentrations. We have therefore included Condition of

Certification **PUBLIC HEALTH-1**. This condition specifically requires the project owner to prepare and implement a biocide and anti-biofilm agent monitoring program to ensure that proper levels of biocide and other agents are maintained within the four wet cooling towers at all times, that periodic measurements of Legionella levels are conducted, and that periodic cleaning is conducted to remove biofilm build up. The evidence establishes that these measures assure that the risk associated with bacterial growth and dispersal will be reduced to less than significant. (Ex. 301, pp. C.5-20 - C.5-21.)

3. Cumulative Impacts

A project may result in a significant adverse impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (Cal. Code Regs., tit.14, § 15130.)

Cumulative impacts could occur if impacts from the PSPP combined with those of other local or regional facilities, for example if PSPP's emissions plume combined with plumes from other projects. In the present case, the evidence establishes that this combination of impacts would have to occur within the PSPP's boundaries or within one-half mile of the PSPP in order to result in potential adverse public health impacts. (Ex. 301, p. C.5-29.)

The only nearby existing source of emissions is Interstate 10, a major route for trucks delivering goods to and from California, located about one-half mile south of the PSPP. This source is located close enough to the proposed PSPP site for public health cumulative impacts to be feasible. However, due to the low emissions of TACs modeled for this project and the resulting minimal health risks, the potential for significant cumulative impacts is extremely low. In addition, the point of maximum impact modeled by the Applicant was located near the northern facility fence line, about two miles north of I-10. Furthermore, emissions from I-10 would be predominantly DPM from truck traffic, which has been demonstrated to have very localized impacts, with the highest concentration of DPM occurring in the immediate vicinity of the source. Previously modeled cumulative impacts for several projects in San Francisco, Hayward, and Carlsbad have all demonstrated that unless two sources are within about a block of each other their impacts do not combine to turn an insignificant individual health risk into a significant one. Based on these past results, the cumulative impacts of the PSPP combined with I-10 emissions would be insignificant. (Ex. 301, p. C.5-29.)

4. Public Benefits

Finally, the evidence shows that a solar electric generating facility would emit significantly fewer TACs to the environment than other energy sources available in California such as natural gas or biomass. This reduces the health risks that would otherwise occur. At the same time, the PSPP would provide much needed electrical power to California residences and businesses, and will contribute to electric reliability. (Ex. 301, p. C.5-31.)

FINDINGS OF FACT

Based on the evidence, we make the following findings and conclusions:

1. Construction and operation of the project will result in the routine release of criteria and noncriteria pollutants that have the potential to adversely impact public health.

2. Exposure to diesel particulate emissions from construction equipment is short-term and will not result in long-term carcinogenic or non-carcinogenic health effects.

3. Exposure to construction-related diesel particulates will be mitigated to the extent feasible by implementing measures to reduce equipment emissions.

4. Exposure to fugitive dust due to excavation and construction activities will be mitigated to insignificant levels by implementing measures to reduce dust production and dispersal.

5. Emissions of criteria pollutants, as discussed in the **Air Quality** section of this Decision, will be mitigated to levels consistent with applicable state and federal standards.

6. Emissions of noncriteria pollutants or toxic air contaminants are assessed according to procedures developed by state and federal regulatory agencies to evaluate potential health effects.

7. The accepted method used by state regulatory agencies in assessing the significance for both acute and chronic non-carcinogenic public health effects of noncriteria pollutants is known as the hazard index method. A similar method is used for assessing the significance of potential carcinogenic effects.

8. Both the Applicant and Staff performed a screening level health risk assessment of the project's potential health effects due to emissions of toxic air contaminants.

9. The health risk assessment is based on worst case assumptions using the highest emission factors, assuming the worst weather conditions, and calculating effects at the point of maximum impact so that actual risks are expected to be much lower at any other location.

10. The project owner will implement a Cooling Water Management Plan to minimize the potential for growth of Legionella bacteria and other micro-organisms in cooling tower emissions.

11. Cumulative impacts from noncriteria pollutants were analyzed in accordance with the provisions of CEQA and are not expected to be significant.

12. Since the project's contributions to health risks are well below the significance level, the project is not expected to contribute significantly to a cumulative health impact.

13. Implementation of any of the Alternatives mentioned above is not necessary or preferable as a means of reducing project related impacts to below a level of significance.

CONCLUSIONS OF LAW

1. We therefore conclude that emissions of noncriteria pollutants from the construction and operation the Palen Solar Power Project do not pose a significant direct, indirect, or cumulative adverse public health risk.

2. The project will comply with the applicable laws, ordinances, regulations, and standards specified in the appropriate portion of **Appendix A** of this Decision.

CONDITION OF CERTIFICATION

PUBLIC HEALTH-1 The Project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to a minimum. The Plan shall be consistent with either Staff's "Cooling Water Management Program Guidelines" or with the Cooling Technology Institute's "Best Practices for Control of Legionella" guidelines but in either case, the Plan must include sampling and testing for the presence of Legionella bacteria at least every six months. After two years of power plant operations, the

project owner may ask the CPM to re-evaluate and revise the Legionella bacteria testing requirement.

Verification: At least 60 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the CPM for review and approval.

D. WORKER SAFETY AND FIRE PROTECTION

Industrial workers are exposed to potential safety and health hazards on a daily basis. Federal and state laws and standards related to industrial workers are designed to ensure that these hazards are minimized to insignificant levels.[1] (Ex. 300, p. C.14-6.) This topic analyzes whether Applicant's proposed safety and health plans are in accord with applicable LORS and adequate to protect industrial workers from hazardous working conditions. This topic also discusses the availability and adequacy of fire protection and emergency response services, as well as the mitigation measures necessary to ensure adequate response.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Worker Safety

Industrial environments are potentially dangerous during construction, operation, and demolition activities. Workers at the Palen Solar Project will be exposed to excessive heat, loud noises, moving equipment, trenches, and confined space entry and egress problems. Potential injuries and death could result from falling, tripping, burns, lacerations, falling equipment or structures, chemical spills, hazardous waste, fires, explosions, electrical sparks, and electrocution. (Ex. 300, p. C.14-5.)

In this case, the solar plant presents a unique work environment with extreme heat conditions. The solar field features thousands of mirrors that are designed to raise the temperature of the heat transfer fluid (HTF) to approximately 750°F. At the mirror focal point, the HTF pipes may reach temperatures as high as 1100°F. During the life of the project, it is likely that mirrors will break, pipes will age, and HTF could leak and catch fire, thus creating very hazardous conditions. Workers must inspect the solar array for HTF leaks and broken mirrors at least once a day and routinely clean the mirrors, which are especially dangerous jobs during the summer months of peak solar generation when ambient temperatures typically reach 115°F and above. Exposure to herbicides used to prevent weed growth under the solar arrays also poses a serious health risk to workers who apply the herbicide and/or work around the mirrors. (Ex. 300, p. C.14-9.)

[1] We take administrative notice that the U.S. Labor Department recently issued a critical report on enforcement of workplace safety in California and ordered the state to fix myriad problems, including poor training of safety inspectors and delays in responding to complaints. See the Federal Annual Monitoring and Evaluation Report for FY 2009 by the U.S. Department of Labor OSHA Region IX at: http://www.osha.gov/dcsp/osp/efame/ca_efame_with_appendices.pdf

Thus, it is important for the project owner to adopt well-defined policies and procedures, training, hazard recognition, and controls to minimize injuries and to protect the health of onsite workers. (Ex. 300, p. C.14-10.)

The evidence provides extensive details on the worker safety and health programs required by applicable law and the project-specific safety measures necessary to protect onsite workers. Specifically, the project owner must develop and implement a "Construction Safety and Health Program" and an "Operations and Maintenance Safety and Health Program," both of which must be approved by BLM's Authorized Officer and the Energy Commission's Compliance Project Manager prior to project construction and operation. A separate "Injury and Illness Prevention Program," a "Personal Protective Equipment Program," an "Emergency Action Plan," a "Fire Prevention Plan," and other general safety procedures will be prepared for both the construction and operation phases of the project. (Exs. 1, § 5.18.3.1 et seq., Table 5.18-6; 300, pp. C.14-5 to C.14-11.) Conditions of Certification **WORKER SAFETY-1** and **-2** ensure that these measures will be developed and implemented in compliance with applicable LORS.

In addition, Conditions **WORKER SAFETY 1** and **-2** require the project owner to include the following measures in the Worker Safety and Health programs:

- A Worker Heat Stress Protection Plan that implements and expands on existing Cal-OSHA regulations requiring heat illness prevention during construction and operation; and

- The development and implementation of Best Management Practices for the storage and application of herbicides used to control weeds beneath and around the solar array to reduce fire hazards during operation. (Ex. 300, p. C.14-10.)

To address the possibility that soil contamination could be encountered during construction, Conditions **WASTE-1** and **WASTE-2** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. Another hazard at this site is the potential of encountering unexploded ordnance (UXO) from large scale military training exercises during WWII. Condition **WASTE-1** requires the project owner to implement an UXO Identification, Training and Reporting Plan to train site workers to identify and avoid UXO. See the **Waste Management** section of this Decision for a more detailed analysis. (Ex. 300, p. C.14-4 to C.14-5.)

Federal and state Occupational Safety and Health Administration ("OSHA/Cal-OSHA") standards encourage employers to monitor worker safety by employing a "competent person" who has knowledge and experience enforcing workplace safety standards, can identify hazards relating to specific project operations, and has authority to take appropriate action. To implement this safe workplace policy during project construction, Condition **WORKER SAFETY-3** requires the project owner to employ a power plant Construction Safety Supervisor to coordinate and implement the Construction and Operation Safety and Health Programs, as well as investigate any safety-related incidents and emergency responses. (Ex. 300, p. C.14-10 to C.14-11.)

To further reduce and/or eliminate workplace hazards during project construction and operation, the project owner must also employ a professional Safety Monitor. The Safety Monitor will report to the Chief Building Official (CBO) and the Compliance Project Manager (CPM), track compliance with OSHA/Cal-OSHA regulations, and serve as an on-site OSHA expert. The Safety Monitor is also responsible for auditing safety compliance and ensuring that safety procedures are implemented during construction, commissioning, and the transition to operational status. (Ex. 300, pp. C.14-11 to C.14-12.) Condition **WORKER SAFETY-4** ensures that the Safety Monitor performs the duties described in the evidentiary record.

To provide immediate response in the event of a medical emergency, Condition **WORKER SAFETY-5** requires the project owner to maintain an automatic portable defibrillator on-site, to ensure that it is available during construction and operation, and to train appropriate personnel to use it. [2] (Ex. 300, pp. C.14-27 to C.14-28.)

Valley Fever. Construction workers at the site could be exposed to Coccidiodomycosis ("Valley Fever" or "VF") because soil disturbance of previously undisturbed lands could release dust containing inhalable spores of the Coccidiodes immitis fungus, which could infect the lungs with potentially severe consequences. In Riverside County, there are approximately 50 reported cases of Valley Fever per year and nine reported deaths between 2005 and 2008. To minimize potential exposure to Valley Fever, onsite workers will be required to wear dusk masks and to thoroughly wet the soil prior to and during

[2] Staff's testimony indicates that the potential for both work-related and non work-related heart attacks exists at power plants. The quickest medical intervention can be achieved with the use of an onsite defibrillator. Many modern industrial and commercial enterprises maintain defibrillators for emergency use. Staff therefore endorses this as an appropriate safety and health precaution. (Ex. 300, pp. C.14-27 to C.14-28.)

excavation and construction activities. These requirements are contained in the dust (PM10) control measures described in the **Air Quality** section of this Decision. (See Conditions **AQ-SC3** and **AQ-SC4**.) In addition, Condition **WORKER SAFETY-9** requires supplemental dust control safeguards, including methods equivalent to the requirements of Rule 402 of the Kern County Air Pollution Control District, which identifies specific measures designed to reduce VF exposure. (Ex. 300, pp. C.14-12 to C.14-17.)

3. Fire Protection and Emergency Response

Project construction and operation pose the potential for both small fires and major structural fires. Electrical sparks, combustion of fuel oil, HTF, hydraulic fluid, mineral oil, insulating fluid or flammable liquids, explosions, and over-heated equipment may cause fires. (Ex. 300, pp. C.14-17 to C.14-18.)

The project will rely upon both local fire protection services and on-site fire protection systems, which provide the first line of defense for such occurrences. (Ex. 300, p. C.14-18.) The Construction Fire Prevention Plan required by Condition **WORKER SAFETY-1** must specify the measures employed to minimize the likelihood of fires during construction, including the locations of portable fire extinguishers, safety procedures, hazardous materials clean-up procedures, and worker training.

During construction, it will be necessary to install both a concrete batch plant and a large fuel depot (20,000 gallons of diesel and 500 gallons of gasoline) at the site. (Ex. 300, pp. C.14-18 to C.14-19.) Conditions **WORKER SAFETY-1** and **-2** require the project's Fire Prevention Plans to comply with federal and state fire safety LORS related to the construction and operation of the concrete batch plant and fuel depot, including the most current versions of the following:

- Chapter 22 of the California Fire Code: Motor Fuel-Dispensing Facilities and Repair Garages (formally adopted by Riverside County); and
- National Fire Protection Association (NFPA) Code 30A: Motor Fuel Dispensing Facilities and Repair Garages.

All power plants sites licensed by the Energy Commission must have more than one entry point to provide access to fire department vehicles and emergency personnel if the main gate is blocked. As proposed, the Palen Solar site had only one access road to the main gate via a new public road from I-10. If the main access road or gate were blocked, the site would be isolated and emergency

vehicles could not respond in a timely manner. Therefore, to ensure emergency access to the site, Condition **WORKER SAFETY-6** requires the project owner to construct and maintain a secondary road and access gate for emergency vehicles and to equip the secondary gate with either a remote system or a keypad for fire department and other emergency personnel to open the gate. (Ex. 300, p. C.14-20.)

The evidence indicates that during operation, the project will meet the fire protection and suppression requirements of the California Fire Code, all applicable NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal-OSHA requirements. These fire standards require the on-site fire suppression components to include both fixed and portable fire extinguishing systems located throughout the site. (Ex. 300, pp. C.14-21 to C.14-22.)

Each of the two power block units includes a fire water suppression system with fire extinguishers and a one-million gallon service/fire water storage tank with 360,000 gallons in each tank dedicated to fire protection. One electric and one diesel-fueled backup firewater pump at each tank ensures water supply to each fire protection loop with an electric jockey pump designed to maintain adequate water pressure in the system. (Ex. 1, § 5.18.3.2.)

Fire hydrants will be installed throughout the site per NFPA requirements and a sprinkler deluge system will be installed in areas of risk including each power unit's transformer as well as the HTF expansion tank and circulating pump area. The solar fields will be protected by isolation valves that would allow only a finite amount of HTF to burn before extinguishing. In addition, an on-site firefighting foam truck will be available. Sprinkler systems will also be installed at the STGs and in administrative buildings. (Ex. 1, § 5.18.3.2.)

The fire protection system must also include fire detection sensors and monitoring equipment that trigger alarms and automatically actuate the suppression systems in accordance with applicable LORS. (Ex. 1, § 5.18.3.2.)

The Riverside County Fire Department (RCFD) has jurisdiction to enforce fire safety at the site and is therefore required to provide initial fire protection support and respond to major hazardous materials incidents at the site. The closest RCFD fire station to the project site is the Lake Tamarisk Station #49 located at 43880 Lake Tamarisk in Desert Center, about 13 miles from the project. The estimated response time is 14 minutes once dispatched. The next nearest station is the Blythe Air Base Station #45 located about 40 miles east, with a

response time of about 30 minutes once dispatched. The fire station in Indio (Terra Lago Station #87 located at 42900 Golf Center Parkway, about 59 miles west of the site) could also respond if necessary, with a response time of 45 minutes once dispatched. All RCFD fire stations are staffed full-time with a minimum of three personnel per shift which include paramedics. (Ex. 300, p. C.14-4.)

According to Applicant, appropriate plant personnel will be trained as a hazardous materials response team and one or more spill response kits will be available on-site. (Ex. 1, § 5.6.4.2.) In the event of a large incident involving hazardous materials, backup support will be provided by the RCFD, which has a hazmat response unit located in Palm Desert (about 70 miles away) and could respond within 1.5 to 2 hours. (Ex. 300, p. C.14-4.)

Staff provided extensive testimony about the critical need for adequate and timely hazmat spill response in the event of an emergency. Since the RCFD's hazmat response time will likely be impeded due to the remote location of the site, we have adopted Condition **WORKER SAFETY-10**, which requires the project owner to participate in joint training exercises with the RCFD. The project owner must coordinate this training with other Energy Commission-licensed solar power plants in Riverside County to enhance the ability of the RCFD to handle hazmat emergencies at these facilities. (Ex. 300, p. C14-21.)

Palen Solar and the other proposed solar power plants along the I-10 corridor (Palen and Genesis) are different from the light industry and residential development in the Riverside County desert region. They are also different from the existing natural gas power plants in the Palen area as well as the small solar plants located at Harper Lake and Kramer Junction in San Bernardino County. The new solar plants are much larger in scale and will have huge amounts of highly flammable HTF and large fuel storage depots onsite during construction and operations. The amount of highly flammable fuel stored and used onsite, combined with the remote locations of the new solar projects and the potential for escalation of a small fire into a large conflagration, presents an emergency response challenge never before experienced by the RCFD. (Ex. 300, pp. C14-21 to C.14-25.)

According to Staff, standard fire department responses for a fire and/or a hazmat spill require six engines and at least three firefighters on each engine. To fight a fire inside a structure, the RCFD must adhere to standard operating procedures and Cal-OSHA regulations that require "two men in", "two men out." Thus, a

response of three firefighters from one station would require dispatch engines from at least three fire stations so that a minimum of nine firefighters could be sent to the scene. In the event of two or more fires at the same time, it would be even more difficult to respond because the RCFD does not have a mutual aid agreement with other fire agencies in the area. Staff notes that current statewide budgetary shortfalls that impact fire services are common and Riverside County is no exception. (Ex. 300, pp. C14-22 to C.14-25.)

Evidence reveals that the RCFD is not adequately equipped to respond to fire, hazmat, rescue, or EMS emergencies in a timely manner at the Palen Solar site because the nearby stations are out-dated and poorly equipped to handle emergencies at power plants. The RCFD indicated that a modern & well-staffed fire station located closer to the new solar power plants would be necessary to respond to potential emergencies at the facilities. (Ex. 300, pp. C14-21 to C.14-25.)

To mitigate this situation, the RCFD proposed that the solar plant developers contribute to "Development Impact Fee Programs" adopted by the Riverside County Board of Supervisors. We find this approach is reasonable because it allows the developers and the county to negotiate terms of the fee agreements. Therefore, Condition **WORKER SAFETY-7** requires Palen Solar to either (1) reach an agreement, either individually or in conjunction with a power generation industry association or group that negotiates on behalf of its members, with the Riverside County Fire Department (RCFD) regarding funding of its project-related share of capital and operating costs to build and operate new fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection services within the jurisdiction **OR** fund its share of the capital costs in the amount of $850,000 and provide an annual payment of $375,000 to the RCFD for the support of new fire department staff and operations and maintenance commencing with the start of construction and continuing annually thereafter on the anniversary until the final date of power plant decommissioning. The project owner's compliance with Condition **WORKER SAFETY-7** ensures that the project's impacts on the RCFD will be mitigated to insignificant levels. (Ex. 300, pp. C.14-24 to C.14-25.)

Since Conditions **WORKER SAFETY-1** and **-2** require the RCFD's approval of the Construction and Operation Fire Prevention Plans prior to construction and operation of the project, it is necessary for the project owner to negotiate the fire services mitigation fee required by Condition **WORKER SAFETY-7** before

submitting the Fire Prevention Plans and make the first payment before construction begins. (Ex. 300, p. C.14-21.)

Condition **WORKER SAFETY-7** also addresses the project's contribution to cumulative impacts on the fire and emergency service demand presented by the large solar projects in the Palen Solar vicinity. (Ex. 300, p. C.14-35, et seq.)

The project will store large amounts of propane or other Liquefied Petroleum Gas that present a risk of explosion and fire. An unconfined vapor cloud explosion of accidentally released propane or a BLEVE (Boiling Liquid Expanding Vapor Explosion) of a propane tank would likely destroy parts of the solar arrays, damage valves, and render the command and control system inoperable, thus resulting in a widespread HTF fire. The amount of flammable, combustible, and/or explosive materials stored and used onsite, combined with the potential for escalation of a small fire into a large conflagration enveloping the entire site and endangering the public presents an emergency response challenge for the RCFD. Given these considerations, Staff recommended the placement of a water spray system above each LPG tank as an effective method of cooling the LPG tanks should a fire occur. We have incorporated Staff's proposal in Condition **WORKER SAFETY-8**, which requires the project owner to install a water spray system above each LPG tank. (Ex. 300, pp. C.14-23, C.14-25 to C.14-27.)

Finally, the evidence addresses the impacts of the Reconfigured, Reduced Acreage and No Project Alternatives regarding this topic. None of the alternatives would significantly alter the level of impacts posed by the project. Since Palen Solar, if mitigated in accordance with the Conditions of Certification, will not create significant adverse impacts in this topic area, it is not necessary to consider any of the alternatives to further reduce impacts to levels of insignificance. (Ex. 300, p. C.14-28 et seq.)

FINDINGS OF FACT

Based on the uncontroverted evidence, the Energy Commission makes the following findings:

1. Industrial workers at the project site and along the linear corridors will be exposed to potential safety and health hazards on a daily basis.

2. To protect workers from job-related injuries and illnesses, the project owner will implement comprehensive Safety and Health Programs for both the construction and the operation phases of the project.

3. The Safety and Health Programs will include a Worker Heat Stress Protection Plan to address working conditions in the extreme desert heat and Best Management Practices to prevent worker exposure to herbicides used to remove vegetation at the site.

4. The Safety and Health Programs will include enhanced dust control and prevention measures to protect workers from exposure to Valley Fever.

5. The Safety and Health Programs will include measures to protect workers from exposure to unexploded ordnance and other munitions remnants that could be encountered at the site.

6. The project will employ an onsite professional Safety Monitor during construction and operation.

7. The project will include onsite fire protection and suppression systems as the first line of defense in the event of a fire.

8. The Riverside County Fire Department (RCFD) will provide fire protection and emergency response services to the project and participate in annual training of solar plant personnel in hazmat emergency response.

9. To ensure that fire and emergency service resources are adequate to meet project needs, the project owner will negotiate a mitigation fee either individually or as part of a solar power plant group with the RCFD to pay for the capital costs of building and upgrading RCFD fire stations and to purchase necessary equipment to address the demand of Palen Solar and other large solar projects in Riverside County.

10. The mitigation fee agreement with the RCFD addresses the Palen Solar Project's contribution to cumulative impacts on the RCFD's resources due to several large new solar projects in Riverside County.

11. The record addresses the impacts of the Reconfigured, Reduced Acreage and No Project Alternatives in regard to this topic area.

12. None of the alternatives discussed in the record would significantly affect the level of impacts posed by the project as mitigated in accordance with the Conditions of Certification.

CONCLUSIONS OF LAW

1. We therefore conclude that with implementation of the Conditions of Certification listed below and the mitigation measures described in the evidentiary record, the Palen Solar Project will not result in significant health and safety impacts to onsite workers.

2. We further conclude that the mitigated Palen Solar Project, as described in the evidentiary record, will comply with all applicable laws, ordinances, regulations, and standards listed for Worker Safety and Fire Protection as set forth in the appropriate portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program that complies with all applicable federal and state LORS for Worker Safety and Health and includes the following:

- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Injury and Illness Prevention Program, including measures to prevent exposure to Valley Fever;
- a Construction heat stress protection plan that implements and expands on existing Cal-OSHA regulations as found in 8 CCR 3395;
- a Construction Emergency Action Plan; and
- a Construction Fire Prevention Plan that includes the concrete batch plant and the above-ground fuel depot.

The Personal Protective Equipment Program, the Exposure Monitoring Program, the Heat Stress Protection Plan, and the Injury and Illness Prevention Program shall be submitted to 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 Riverside County Fire Department (RCFD) for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Riverside County Fire Department stating the fire

department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program that complies with all applicable federal and state LORS related to Worker Safety and Health and includes the following:

- an Operation Injury and Illness Prevention Plan, including measures to prevent exposure to Valley Fever;
- an Operation heat stress protection plan that implements and expands on existing Cal OSHA regulations (8 CCR 3395);
- a Best Management Practices (BMP) for the storage and application of herbicides;
- an Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Plan that includes the fuel depot should the project owner elect to maintain and operate the fuel depot during operations (8 Cal Code Regs. § 3221) as well as the fire protection measures described in this Decision and any necessary upgrades required by current applicable LORS; and
- Personal Protective Equipment Program (8 Cal Code Regs, §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, Heat Stress Protection Plan, BMP for Herbicides, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the Riverside County Fire Department for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Riverside County Fire Department stating the fire department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has

authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
- assure that all construction and commissioning workers and supervisors receive adequate safety training;
- complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and
- assure that all the plans identified in Conditions of Certification **Worker Safety-1** and **-2** are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement CSS shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

A. A record of all employees trained for that month (all records shall be kept on site for the duration of the project);

B. A summary report of safety management actions and safety-related incidents that occurred during the month;

C. A report of any continuing or unresolved situations and incidents that may pose danger to life or health; and

D. A report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 30 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall:

A. Provide a secondary site access gate for emergency personnel to enter the site. This secondary site access gate shall be at least one-quarter mile from the main gate.

B. Provide a second access road which provides entry to the site. This road shall be at a minimum an all-weather gravel road, at least 20 feet wide, and shall come from the Interstate-10 right-of-way to the project site at the location of where the fence line of the eastern solar field comes the nearest to the I-10 right-of-way, if approved by Caltrans, a locked gate shall be placed in the I-10 right-of-way fence. The RCFD, the California Highway Patrol, and the Riverside County Sheriff's Department shall be given access to the gate.

C. Maintain the main access road and the second access road and provide a plan for construction and implementation.

Plans for the secondary access gate, the method of gate operation, secondary gravel road, and maintenance of the roads shall be submitted to the Riverside County Fire Department for review and comment and to the CPM for review and approval.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the RCFD and the CPM preliminary plans showing the location of a secondary site access gate to the site, a description of how the secondary site access gate will be opened by the fire department and other emergency services, and a description and map showing the location,

dimensions, and composition of the main road, and the gravel road to the secondary site access gate.

At least 30 days prior to the start of site mobilization, the project owner shall submit the secondary site access gate final plans plus the road maintenance plan to the CPM for review and approval. The final plan submittal shall also include a letter containing comments from the Riverside County Fire Department or a statement that no comments were received.

At least 30 days after approval by Caltrans, the project owner shall submit final plans for the gate in the I-10 right-of-way to the Riverside County Fire Department for review and comment and to the CPM for review and approval.

WORKER SAFETY-7 The project owner shall either:

A. Reach an agreement with the Riverside County Fire Department regarding funding of its project-related share of capital costs to build fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection services, **or**, if no agreement can be reached shall

B. Fund its share of the capital costs in the amount of $850,000 and shall provide an annual payment of $375,000 to the RCFD for the support of three fire department staff commencing with the date of site mobilization and continuing annually thereafter on the anniversary until the final date of power plant decommissioning.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall provide to the CPM for review and approval either:

1. A copy of the agreement with the RCFD or
2. Documentation that a letter of credit in the amount of $850,000 has been provided to the RCFD and documentation that a letter of credit in the amount of $375,000 will be provided to RCFD each year at the start of commercial operations. Proof of the annual $375,000 letter of credit shall be included each year in the Project Owner's Annual Report to the CPM.

WORKER SAFETY-8 The project owner shall place a water spray system on the two LPG storage tanks. The engineering design plans shall comply with NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection* and be provided to the CPM for review and approval prior to commencing construction of the water spray system.

Verification: At least 30 days prior to site mobilization, the project owner shall provide the engineering design plans to the CPM for review and approval. At least 30 days prior to the delivery of any LPG to the facility, the project owner shall provide a written statement to the CPM that the LPG tank water spray system has been built and successfully tested.

WORKER SAFETY-9 The project owner shall develop and implement an enhanced Dust Control Plan that includes the requirements described in Conditions **AQ-SC3** and **AQ-SC4**, and additionally requires:

A. Site worker use of dust masks (NIOSH N-95 or better) whenever visible dust is present;

B. Implementation of Rule 402 of the Kern County Air Pollution Control District (as amended Nov. 3, 2004); and

C. Implementation of enhanced dust control methods (increased frequency of watering, use of dust suppression chemicals, etc. consistent with **AQ-SC4**) immediately whenever visible dust persists in the breathing zone of the workers, or when PM10 measurements obtained when implementing B (above) indicate an increase in PM10 concentrations due to project activities of 50 $\mu g/m^3$ or more.

Verification: At least 30 days prior to the commencement of site mobilization, the enhanced Dust Control Plan shall be provided to the CPM for review and approval.

WORKER SAFETY-10 The project owner shall participate in annual joint training exercises with the Riverside County Fire Department (RCFD). The project owner shall coordinate this training with other Energy Commission-licensed solar power plants within Riverside County such that this project shall host the annual training on a rotating yearly basis with the other solar power plants.

Verification: At least 10 days prior to the start of commissioning, the project owner shall submit to the CPM proof that a joint training program with the RCFD is established. In each January Monthly Compliance Report during construction and the Annual Compliance Report during operation, the project owner shall include the date, list of participants, training protocol, and location of the annual joint training.

E. HAZARDOUS MATERIALS MANAGEMENT

This section considers whether the construction and operation of the Palen Solar Power Project (PSPP) will create significant impacts to public health and safety resulting from the use, handling, transportation, or storage of hazardous materials.[1] The evidence contains analyses of plausible potential spills for the hazardous materials to be used at the proposed facility. The worst case plausible event, regardless of cause, is considered, and analyzed to see whether the risk to local populations is significant. Hazardous material handling and usage procedures are incorporated 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 avoid significant off-site impacts. The analyses contained in the record look at potential direct contact from runoff of spills, air-borne plume concentrations, and the potential for spills to mix with runoff water and be carried off-site. The Applicant has proposed secondary containment basins for containing liquids, and determined that volatile chemicals would have a restricted exposure to the atmosphere after capture. [2] (Ex. 1; Ex. 301, p. C.4-1.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Potential Risks

The evidence chronicles the method used to assess risks posed by hazardous materials. This method included the following elements:

- A review of chemicals, the amounts proposed for on-site use, and a determination of the need and appropriateness of their use.
- Chemicals which would be used 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 consideration.
- Measures proposed to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different size transfer-hose couplings, as well as administrative controls such as worker training and safety management programs.

[1] The **Worker Safety and Fire Protection** portion of this Decision addresses the protection of workers from such risks.

[2] In this instance, there are no sensitive receptors within a 3-mile radius of the project vicinity. (Ex. 301, p. C.4-6.)

- Measures proposed to respond to accidents were reviewed and evaluated. These included engineering controls such as catchment basins and methods to keep vapors from spreading, as well as administrative controls such as training emergency response crews.
- An analysis of the theoretical impacts on the public of a worst-case spill of hazardous materials even with the mitigation measures in place. (Ex. 301, pp. C.4-4.)

Hazardous materials used during construction will include gasoline, diesel fuel, motor oil, welding gases, lubricants, solvents, paint, and welding gasses. A concrete batch plant for the construction phase of the project would require the use of some additional hazardous materials such as fly ash and calcium chloride. All of these will be used in small quantities, and any spills or other releases will be confined to the site. No acutely toxic materials will be used on-site during construction. (Ex. 301, p. C.4-7.)

During operations, hazardous materials such as cleaning agents, water treatment chemicals, welding gases, oils, activated carbon, and other chemicals will be used or stored only in small quantities; these present limited off-site dangers because of their low volatility and/or toxicity. (*Id*.) **Attachment A** (incorporated in Condition of Certification **HAZ-1** at the end of this section) lists the hazardous materials that will be used and stored on-site. Condition **HAZ-1** prohibits the project owner from using hazardous materials not listed in **Attachment A**, or storing them in greater quantities than specified, without prior approval of the Energy Commission's Compliance Project Manager (CPM). (Ex. 301, p. C.4-7.) None of these materials, except for liquefied petroleum gas (LPG) and Therminol VP-1™, the proposed heat transfer fluid (HTF) as discussed below, pose significant potential for off-site impacts as a result of the quantities on-site, their relative toxicity, their physical state, and/or their environmental mobility. (Ex. 301, pp. C.4-7 to C.4-9.)

a. Liquefied Petroleum Gas (LPG)

LPG at the proposed facility will only be used to fuel the auxiliary boilers. LPG is composed mostly of propane and butane and poses a fire and explosion risk (not a risk of toxicity) because of its flammability. Up to 72,000 gallons (152,000 lbs) of LPG would be stored in two 18,000-gallon carbon steel tanks equipped with secondary containment structures.

Staff testimony states that, as a result of its analysis, Staff has determined that the predominant risk of LPG use at the site is that of fire and explosion.

Accordingly, these risks are discussed in the **Worker Safety and Fire Protection** section of this Decision, along with mitigation measures. Staff also noted that this proposed project is located very close to I-10 and along a main east-west natural gas line owned by Southern California Edison. On this basis Staff suggested but did not propose a Condition requiring that the project use natural gas as a safer alternative to firing the auxiliary boilers because as noted by staff, the applicant has proposed, along with staff, many safety features that reduce the risk of the use of LPG to a less than significant level (Ex. 301, p. C.4-7.). We have incorporated in our Conditions of Certification those safety features that reduce the risk of the use of LPG to a less than significant level. (Ex. 301, p. C.4-8.)

b. Therminol VP-1™

Therminol VP1 is the heat transfer fluid (HTF) that will be used in the solar panels to collect solar heat and transfer it in order to generate steam to run the steam turbines. Therminol is a mixture of 73.5 percent diphenyl ether and 26.5 percent biphenyl, and is a solid at temperatures below 54°F. It can therefore be expected to remain liquid if a spill occurs during the late spring, summer, and early fall months when day-time and night-time temperature do not drop below 54 °F. At cooler temperatures Therminol will crystallize into a waxy solid. Although the risk of off-site migration is low, Therminol is highly combustible and even flammable at the normal operating temperature of 750 °F and fires have occurred at other solar generating stations that use it.

Approximately 2,600,000 gallons of HTF will be stored at the PSPP contained in the pipes, heat exchanger, ullage tanks, expansion tank, and thermal troughs. Isolation valves would be placed throughout the HTF piping system designed to automatically block off sections of the piping in which a loss of pressure is detected (Ex. 1, Section 5.6.3.3). Staff testified that the placement of additional isolation valves in the HTF pipe loops throughout the solar array would add significantly to the safety and operational integrity of the entire system by allowing a loop to be closed if a leak develops instead of closing off the entire HTF system and shutting down the plant. Accordingly, we have adopted Condition of Certification **HAZ-4,** which would require the project owner to install a sufficient number of isolation valves that can be manually, remotely or automatically activated so as to limit the maximum amount of spilled HTF to 1250 gallons. This amount is a maximum amount that could be lost if a catastrophic break in a HTF pipe in the solar field were to break. It is based on the size of the solar array pipe loops and an effort to avoid placing too many valves in the pipes,

thereby adding friction and turbulence which would disrupt the flow of HTF and cause a decrease in power generation. Too many valves would cause disruption in flow and too few valves would result in a far larger maximum potential spill volume. Most leaks in existing solar power plants will be very small and result in very small amounts lost. Additionally, the Cal-OSHA Process Safety Management (PSM) standard will apply and thus we have included the standard in proposed Condition of Certification **HAZ-2**. (Ex. 301, pp. C.4-8 to C.4-9.)

In addition, Therminol breaks down when heated to the temperatures of a solar system and thus Volatile Organic Compounds (VOCs) emissions occur which contain the toxic HTF decomposition products. The impacts of the release of these decompositions products, which include benzene, are addressed in the **Health and Safety** section of this Decision.

2. Risk Mitigation

a. Engineering and Administrative Controls

Engineering controls and administrative controls affect the significance of potential impacts from hazardous materials usage. Engineering controls are those physical or mechanical systems (such as storage tanks or automatic shut-off valves) which can prevent a hazardous material spill from occurring, which can limit the spill to a small amount, or which can confine it to a small area. Administrative controls are those rules and procedures that workers at the facility must follow. These are designed to help prevent accidents or keep them small if they do occur. Timely and adequate emergency spill response is also a crucial factor. (Ex. 301, p. C.4-9.)

The engineered safety features which will be used at the Palen Solar project include:

- Use of secondary containment areas, surrounding each of the hazardous materials storage areas, designed to contain accidental releases that might happen during storage; and
- Physical separation of stored chemicals in isolated containment areas with a non-combustible partition in order to prevent accidental mixing of incompatible materials which could result in the formation and release of toxic gases or fumes. (Ex. 301, p. C.4-9.)
- Storage of small quantity hazardous materials in original, properly labeled containers;

- installation of a fire protection system for hazardous materials storage areas;
- continuous monitoring of HTF piping system by plant staff and by automatic pressure sensors designed to trigger isolation valves if a leak is detected; and
- designing the propane storage tanks with continuous tank level monitors, temperature and pressure monitors and alarms, and excess flow and emergency isolation valves.

Administrative controls, such as those required in Conditions of Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume) and Condition **HAZ-2** (development of a Hazardous Materials Business Plan) also helps prevent accidents and spills from moving off-site and affecting neighboring communities. Additionally, we are requiring the project to prepare a Worker Safety and Fire Protection Plan that will include:

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;
- safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and
- emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention including the preparation of a SPCC Plan. (Ex. 301, p. C.4-10.)

Condition of Certification **HAZ-2** also ensures that this Plan, which includes the Inventory and Site Map, Emergency Response Plan, Owner/Operator Identification, and Employee Training is provided to the Riverside County Fire Department (RCFD) so that it can better prepare emergency response personnel for handling potential emergencies at the facility. In accordance with Condition of Certification **HAZ-3**, the project owner must also develop and implement a Safety Management Plan for delivery of liquid hazardous materials. This Plan will include procedures, protective equipment requirements, training and a checklist, as well as a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. The Safety Management Plan will be applicable during construction, commissioning, and operation of Palen Solar. (Ex. 301, p. C.4-10.)

The Riverside County Environmental Health Department (RCEHD), the RCFD, and the CPM are concurrently responsible for reviewing the Hazardous Materials Business Plans. (Ex. 301, p. C.4-28; **HAZ-2**.) Plant personnel would be trained as a hazardous materials response team which would be the first responder to hazardous materials incidents. In the event of a large incident involving hazardous materials, backup support would be provided by the RCFD which has a hazmat response unit capable of handling any incident at the proposed Palen Solar facility and would respond in about 1.5-2 hours. (Ex. 1, § 5.6.4.2.) The evidence indicates that, given the remote location, this response time is not adequate but that the Applicant's on-site HazMat Team will be adequately trained and equipped to respond to an emergency at Palen Solar. The project's remote location eliminates the risk of off-site consequences to the public. (*Id.*)

b. Transportation

Containerized hazardous materials will be transported to the facility via truck. The evidence shows that transport of LPG poses the predominant risk associated with hazardous materials transport[3]. (Ex. 301, p. C.4-11.) These materials can be released during a transportation accident, and the extent of their impact in the event of a release depends 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 upon three factors:

- The skill of the tanker truck driver;
- The type of vehicle used for transport; and
- Accident rates.

The use of LPG at the PSPP would require a total of two truck deliveries per week, which amounts to about 104 deliveries per year. Trucks would travel on I-10, exit at Corn Springs Road and continue to the project site via a new access road. LPG will be delivered in 5,000-gallon tanker trucks that would meet the appropriate US Department of Transportation (DOT) requirements (Ex. 1, Section 5.6.3.3).

The evidence shows that the risk of an accidental transportation release in the project area was evaluated. The analysis focused on the project area after the

[3] It should be noted that previous modeling of spills involving much larger quantities of more toxic materials such as aqueous ammonia (a hazardous material that *would not* be used, stored, or transported to the proposed Palen Solar project) has demonstrated that less than significant airborne concentrations would occur at distances from the spill. (Ex. 301, C.4-11.)

delivery vehicle leaves the main Interstate highway. An extensive regulatory program applies to shipment of hazardous materials on California highways to ensure safe handling in general transportation. These regulations also address issues of driver competence, and compliance with the regulatory scheme suffices to alleviate significant concerns over transportation risks. (*Id*.)

In addition, Staff presented evidence regarding the risk of hazardous material spills resulting from an earthquake. (Ex. 301, pp. C.4-12 to C.4-13.) The record shows that based upon the historical record of hazardous material containment during both the earthquakes in Haiti (January 12, 2010; magnitude 7.0) and in Chile (February 27, 2010; magnitude 8.8) Staff determined that tank failures during seismic events are not probable and do not represent a significant risk to the public. (*Id*.) Furthermore, Applicant states that the piping in the solar array will be constructed to be flexible and allow movement due to thermal expansion. The piping will be attached with ball joints and won't be fixed to a rigid structure; therefore failure of the piping during an earthquake is unlikely (Ex. 1, § 5.6.3.3).

3. Site Security

The evidence establishes that a minimum level of security measures is appropriate in order to protect California's electrical infrastructure from malicious mischief, vandalism, or terrorist attack. PSPP proposes to use hazardous materials in sufficient quantities that special site security measures should be developed and implemented to prevent unauthorized access. The North American Electric Reliability Corporation (NERC) published Security Guidelines for the Electricity Sector in 2002 (NERC 2002) as well as issued a Critical Infrastructure Protection standard for cyber security (NERC 2009), and the U.S. Department of Energy published a draft Vulnerability Assessment Methodology for Electric Power Infrastructure in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical Infrastructure listed by the U.S. Department of Homeland Security (DHS). On April 9, 2007, the U.S Department of Homeland Security published, in the Federal Register (6 CFR Part 27), an Interim Final Rule (Chemical Facility Anti-Terrorism Standards or CFATS) requiring facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures.

The Interim Rule lists propane as a Chemical of Interest with a threshold level of 60,000 lbs. The PSPP will store a maximum of 152,000 lbs of propane/LPG and therefore the CFATS regulation will apply and the project owner will need to submit a "Top Screen" assessment to the DHS. (Ex. 301, pp. 6.4-14 to 6.4-15.)

The facility will thus use special site security measures during both the construction and operation phases to prevent unauthorized access. Conditions of Certification **HAZ-5** and **HAZ-6** address both construction security and operations security plans. These plans would require the implementation of site security measures that are consistent with both industry site security documents and Energy Commission guidelines. (See Ex. 301, C.4-14.)

Perimeter fencing and breach detectors will be used. Site personnel will undergo background checks and site access will be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner is required, through the use of contractual language with vendors, to ensure that the hazardous materials suppliers strictly adhere to the U.S. DOT requirements to prepare and implement security plans and to ensure that all hazardous materials drivers are in compliance through personnel background security checks. The compliance project manager (CPM) may authorize modifications to these measures or may require additional measures in response to guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC after consultation with both appropriate law enforcement agencies and the project owner. (Ex. 301, p. C.4-15.)

4. Alternatives

The evidentiary record includes an analysis of several alternatives to the project as proposed. These are: Reconfigured Alternatives #1, #2, and #3, each of which would not change the level of impacts from those of the proposed project. (Ex. 301, pp. C.4-15 to C.4-20.) In addition, the record contains analyses of No Project Alternatives #1, #2, and #3. The first two No Project Alternatives leave open the possibility of another solar generation on the site, which would be likely to have similar hazardous materials impacts to those of the project. However, No Project Alternative #3 assumes BLM prohibiting future solar development on the site. As a result, this No Project/No Action Alternative would not result in impacts from the use of hazardous materials. 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. (Ex. 301, p. C.4-22.)

The Staff analysis notes that the construction and operation of the PSPP will have noteworthy public benefits because the project will involve smaller

quantities of hazardous materials and make use of materials that are less dangerous to the public than a natural-gas fired power plant. Building solar power plants to supply the required energy in California in general benefits the public by reducing the risks otherwise associated with the use and transport of large quantities of more hazardous materials such as aqueous or anhydrous ammonia.

FINDINGS OF FACT

Based on the evidence, we make the following findings:

1. The Palen Solar Project will use hazardous materials during construction and operation.

2. No acutely toxic hazardous materials will be used on site during construction.

3. The major public health and safety danger associated with the project from hazardous materials use is fire and explosion from liquefied petroleum gas (LPG or propane), or fire from Therminol VP-1 heat transfer fluid.

4. The risk of explosion and fire from LPG, or HTF will be reduced to insignificant levels through adherence to applicable codes and the implementation of effective safety management practices.

5. Based on experience through recent seismic events, tank failures during earthquakes are not probable and do not represent a significant risk to the public.

6. Potential impacts from the other hazardous substances used on-site are not significant since quantities will be limited and appropriate storage will be maintained in accordance with applicable law.

7. The hazardous materials transportation associated with the Palen Solar project would not significantly increase the cumulative risks associated with regional hazardous materials transportation.

8. The risk of significant cumulative impacts originating from simultaneous releases of hazardous materials from the Palen Solar Project and nearby facilities is remote and presents no significant risk to the public.

9. The record contains an examination of several alternatives to the proposed project, none of which are preferable to the Palen Solar Project in terms of hazardous materials management.

10. Local emergency responders are adequately equipped and trained to deal with hazardous materials accidents at the Palen Solar Project.

11. Implementation of the mitigation measures described in the evidence and contained in the Conditions of Certification, below, ensures that the project will not cause significant impacts to public health and safety as the result of handling, use, storage, or transportation of hazardous materials.

12. With implementation of the Conditions of Certification, below, the Palen Solar Project will comply with all applicable laws, ordinances, regulations, and standards related to hazardous materials management as identified in the evidentiary record and in the pertinent portion of **Appendix A** of this Decision.

CONCLUSIONS OF LAW

1. The Commission concludes, therefore, that the storage, use, handling, and transportation of hazardous materials associated with the Palen Solar Project will not result in any significant direct or cumulative adverse public health and safety impacts.

2. We conclude that with implementation of the Conditions of Certification below, construction and operation of the Palen Solar Project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of hazardous materials management.

CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous material not listed in **Appendix A**, below, or in greater quantities or strengths than those identified by chemical name in **Appendix A**, below, unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to 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 (HMBP), and Spill Prevention, Control, and Countermeasure Plan (SPCC), and a Process Safety Management Plan (PSMP) to the Riverside County Department of Environmental Health (RCDEH), the Riverside County Fire Department (RCFD), and the CPM for review. After receiving comments from the RCDEH, RCFD, and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final HMBP,

SPCC Plan, and PSMP shall then be provided to the RCDEH and RCFD for information and to the CPM for approval.

Verification: At least 30 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, Spill Prevention, Control, and Countermeasures Plan, and the Process Safety Management Plan to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for the delivery and handling of liquid and gaseous 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 30 days prior to the delivery of any liquid or gaseous hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The project owner shall place an adequate number of isolation valves in the Heat Transfer Fluid (HTF) pipe loops so as to be able to isolate a solar panel loop in the event of a leak of fluid such that the volume of a total loss of HTF from that isolated loop will not exceed 1,250 gallons. These valves shall be actuated manually, remotely, or automatically. The engineering design drawings showing the number, location, and type of isolation valves shall be provided to the CPM for review and approval prior to the commencement of the solar array piping construction.

Verification: At least 30 days prior to the commencement of solar array piping construction, the project owner shall provide the design drawings as described above to the CPM for review and approval.

HAZ-5 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to 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 30 days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-6 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that will be available to the CPM for review and approval. The project owner shall implement site security measures that address 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 or wall, at least eight feet high and topped with barbed wire or the equivalent;
2. main entrance security gate, either hand operated 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. 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 determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   1. B. 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 contractors who visit the project site;

7. site access controls for employees, contractors, vendors, and visitors;
8. a statement(s) (refer to sample, **ATTACHMENT C**), signed by the owners or authorized representative of propane transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.802, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;
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) with cameras able to pan, tilt, and zoom, have low-light capability, and are able to view the outside entrance to the control room, the propane/LPG tank, and the front gate; and
10. additional measures to ensure adequate perimeter security consisting of either:

    A. security guard(s) present 24 hours per day, 7 days per week;

    or

    B. power plant personnel on site 24 hours per day, 7 days per week,

    and

    perimeter breach detectors **or** the CCTV able to view 100% of the entrance gates and the power block areas.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures or cyber security depending upon 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 both appropriate law enforcement agencies and the applicant.

Verification: At least 30 days prior to the initial receipt of HTF or propane/LPG on site, the project owner shall notify 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 that updated certification statements have been 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.

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for employment at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for contract work at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____

(Company name)

for hazardous materials delivery to

_____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

Hazardous Materials Appendix A
Hazardous Materials Proposed for Use at the BSPP

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Sulfuric Acid, 29.5% solution CAS No. 7664-93-9	High toxicity; Hazard class – Corrosive, water reactive	1,000 lbs	PEL: 1 milligram per cubic meter (mg/m^3)	Contained in batteries; 8,000 gal total inventory	Isolated from incompatible chemicals and secondary containment
Carbon Dioxide CAS No. 124-38-9	Low toxicity; Hazard class – Nonflammable gas	Not Applicable	TLV: 5,000 ppm (9,000 mg/m^3) TWA	Carbon steel tank; 60 tons maximum onsite inventory	Carbon steel tank with crash posts
Therminol VP-1 Biphenyl (26.5%) CAS No. 92-52-4 Diphenyl ether (73.5%) CAS No. 101-84-8	Moderate toxicity, Hazard class – Irritant; Combustible Liquid (Class III-B)	Biphenyl = 100 lbs (45.4 kg) Diphenyl ether = Not applicable	Biphenyl = PEL: 0.2 milliliters per cubic meter (ml/m^3) (8-hr TWA) TLV: 0.2 ml/m^3 (1 mg/m^3) (8-hr TWA) Diphenyl ether = TLV: 1 ml/m^3 (8-hr TWA) TLV: 2 ml/m^3 (15-min TWA) PEL: 1 ml/m^3 (7 mg/m^3) (15-min TWA)	8.8 million gal in system, no additional onsite storage.	Continuous monitoring of pressure in piping network; routine inspections (sight, sound, smell) by operations staff; isolation valves throughout piping network to minimize fluid loss in the event of a leak; prompt clean up and repair

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Lube Oil CAS No. 64742-65-0	Low toxicity Hazard class – NA	Not applicable	None established	Carbon steel tanks, 40,000 gallons in equipment and piping, additional maintenance inventory of up to 2,200 gallons in 55-gallon steel drums	Secondary containment area for each tank and for maintenance inventory
Mineral Insulating Oil CAS No. 8042-47-5	Low toxicity Hazard class – NA	Not applicable	None established	Carbon steel transformers; total onsite inventory of 144,000 gallons	Used only in transformers, secondary containment for each transformer
Diesel Fuel CAS No. 68476-34-6	Low toxicity; Hazard class – Combustible Liquid	Not applicable	PEL: none established TLV: 100 mg/m^3 (ACGIH)	Carbon steel tank (4,600 gallon [generator & fire water pump engine])	Stored only in fuel tank of emergency engine, secondary containment
Hydrogen	Low toxicity; Hazard class – Flammable gas	Not applicable	None Established	In generator cooling loop and “tube trailer”; piping system inventory 1,400 pounds; plus 2,600 lbs in storage trailer	Pressure safety tank, crash posts, pressure relief valves
Nitrogen CAS No. 7727-37-9	Low toxicity; Hazard class – Non-Flammable Gas	Not applicable	None established	Carbon steel tank; 30,000 lbs total inventory	Carbon steel tank with crash posts

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Hydraulic fluid CAS No. 64741-89-5	Low to moderate toxicity; Hazard class – Class IIIB Combustible Liquid	Not applicable	TWA (oil mist): 5 mg/m^3 STEL: 10 mg/m^3	Carbon steel tanks and sumps; 2000 gallons in equipment, maintenance inventory of 440 gallons in 55-gallon steel drums	Found only in equipment with a small maintenance inventory; maintenance inventory stored within secondary containment
Welding gas Acetylene CAS No. 74-86-2	Moderate toxicity; Hazard class – Toxic	10,000 lbs	PEL: none established	Steel cylinders; 200 cubic feet each, 3200 cubic feet total on site	Inventory management, isolated from incompatible chemicals
Welding gas Oxygen CAS No. 7782-44-7	Low toxicity; Hazard class – Oxidizer	Not applicable	PEL: none established	Steel cylinders; 200 cubic feet each, 3200 cubic feet total on site	Inventory management, isolated from incompatible chemicals
Welding gas Argon CAS No. 7440-37-1	Low toxicity; Hazard class – Non-flammable Gas	Not applicable	PEL: none established	Steel cylinders; 200 cubic feet each, 3200 cubic feet total on site	Inventory management

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Activated Carbon CAS No. 7440-44-0	Non-toxic (when unsaturated), low to moderate toxicity when saturated, depending on the adsorbed material; Hazard class – combustible solid	Not Applicable	TWA (total particulate): 15 mg/m^3 TWA (respirable fraction): 5 mg/m^3 TLV (graphite, all forms except graphite fibers): 2 mg/m3 TWA	Used in eight x 2,000-lb canisters, 16,000 lbs total inventory, no additional storage	No excess inventory stored on site, prompt disposal when spent
Calcium Hypochlorite 100% CAS No. 7778-54-3	Moderate toxicity; Hazard Class – Corrosive, Irritant	10 lbs	PEL: none established Acute oral toxicity (LD50): 850 mg/kg [Rat].	Minimal onsite storage for water treatment, not expected to exceed 200 lbs	Inventory management, isolated from incompatible chemicals
Water treatment chemical Sodium Carbonate (soda ash)	Low toxicity; Hazard class – Irritant	Not Applicable	TBD	40 tons	Stored in steel silos. Inventory management, isolated from incompatible chemicals
Water treatment chemical Lime (calcium oxide)	Moderate toxicity; Hazard class - Irritant	Not Applicable	TBD	40 tons	Stored in steel silos. Inventory management, isolated from incompatible chemicals

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical Magnesium Chloride	Non-toxic; Hazard class – NA	Not Applicable	TBD	2000 gallons	Inventory management
Water treatment chemical Sodium Bisulfate (aka sodium hydrogen sulfate)	Low toxicity; Hazard class – Irritant	Not Applicable	Sodium bisulfite = PEL: none established: TLV: 5 mg/m^3 TWA	2000 gallons	Inventory management, isolated from incompatible chemicals
Boiler water treatment chemical Ferric Sulfate (35% solution) CAS Number 10028-22-5	Moderate toxicity; Hazard class - Irritant	1,000 lbs	TBD	40,000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO Tri-Act 1800 *or equivalent* Cyclohexlyamine (5 – 10%) Monoehtanolamine (10 – 30%) Methoxyproplyamine (10 – 30%)	High toxicity; Hazard class – Corrosive, Class II Combustible liquid	Not Applicable	Cyclohexlyamine = TLV: 10 ppm (41 mg/m^3) Monoethanolamine = TLV: 3 ppm (7.5 mg/m^3) TWA: 3 ppm (7.5 mg/m^3) STEL: 6 ppm (15 mg/m^3) Methoxyproplyamine = TLV: 5 ppm TWA STEL: 15 ppm	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO Elimin-Ox Carbohydazide (5 - 10%) *or equivalent*	Moderate toxicity; Hazard class – Sensitizer	Not Applicable	Carbohydazide = PEL: none established	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO 3D Trasar 3DT185 Phosphoric Acid (60 -100%) *or equivalent*	High toxicity; Hazard class – Corrosive	Not Applicable	Phosphoric acid = PEL: 1 mg/m^3 (TWA) TLV: 1 mg/m^3 (TWA), STEL: 3 mg/m^3	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO 3D Trasar 3DT177 *or equivalent* Phosphoric acid (30%)	Moderate toxicity; Hazard class – Irritant	Not Applicable	Phosphoric acid = PEL: 1 mg/m^3 (TWA) TLV: 1 mg/m^3 (TWA), STEL: 3 mg/m^3	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO 3D Trasar 3DT190 *or equivalent*	Low toxicity; Hazard class – Irritant	Not Applicable	None established for mixture	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO Acti-Brom (R) 7342 *or equivalent* Sodium bromide	Low toxicity; Hazard class – Irritant	Not Applicable	Sodium bromide = PEL: none established	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO pHreedom® 5200M *or equivalent* Sodium salt of phosphonomethylated diamine	Low to moderate toxicity; Hazard class – Irritant	Not Applicable	Sodium salt of phosphonomethylated diamine = PEL: none established	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO PCL-1346	Low toxicity; Hazard class – Irritant	Not Applicable	None established for mixture	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO Permacare (R) PC-7408 Sodium bisulfite	Low toxicity; Hazard class – Irritant	Not Applicable	Sodium bisulfite = PEL: none established: TLV: 5 mg/m^3 TWA	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO BT-3000 *or equivalent* Sodium hydroxide Sodium tripolyphosphate	High toxicity; Hazard class – Corrosive	Not Applicable	Sodium hydroxide = PEL: 2 mg/m^3 Sodium tripolyphosphate = PEL: none established	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Boiler water treatment chemical, pH adjustment Sodium Hydroxide (50%) CAS Number 1310-73-2	High toxicity; Hazard class – Corrosive	1,000 lbs	Sodium hydroxide = PEL: 2 mg/m^3	40,000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Water treatment chemical NALCO 8338 *or equivalent* Sodium nitrite Sodium tolytriazole Sodium hydroxide	Moderate toxicity; Hazard class – Toxic	Not Applicable	Sodium nitrite = PEL: none established Sodium tolytriazole = PEL: none established Sodium hydroxide = PEL: 2 mg/m^3	Plastic totes, 8 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical 93%-98% sulfuric acid CAS No. 7664-93-9	High toxicity; Hazard class – Corrosive, water reactive	1,000 lbs	PEL: 1 mg/m^3	4,000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical Sodium Hypochlorite (13% solution) CAS No. 7689-52-9	High toxicity; Hazard class – Poison-B, Corrosive	100 lbs	Workplace Environmental Exposure Limit (WEEL) - STEL: 2 mg/m3 PEL: 0.5 ppm (TWA), STEL: 1 ppm as Chlorine TLV: 1 ppm (TWA), STEL: 3 ppm as Chlorine	4,000 gallons	Inventory management, isolated from incompatible chemicals

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Oxygen Scavenger Reagent Acetic Acid 60% CAS No. 64-19-7 Iodine 20% CAS No. 7553-56-2 De-ionized water 20% CAS No. 7732-18-5	Moderate toxicity; Hazard Class – Corrosive, Irritant	5,000 lbs	PEL: 10 ppm TWA PEL: 0.1 ppm N/A	Minimal onsite storage for water treatment, not expected to exceed 200 lbs	Inventory management, isolated from incompatible chemicals
Boiler water treatment oxygen scavenger Carbohydrazide CAS No. 497-18-7	High toxicity; Hazard class – Irritant	Not applicable	Carbohydazide = PEL: none established	2,400 gallons	Inventory management, isolated from incompatible chemicals
Herbicide Roundup® or equivalent CAS No. 38641-94-0	Low toxicity; Hazard class – Irritant	Not applicable	Isopropylamine salt of glyphosphate = no specific occupational exposure has been established	No onsite storage, brought on site by licensed contractor, used immediately	No excess inventory stored on site
Soil stabilizer Active ingredient: acrylic or vinyl acetate polymer or equivalent CAS No. Active ingredient is 'Not Hazardous'	Non-toxic; Hazard class – NA	Not applicable	None established	No onsite storage, supplied in 55-gallon drums or 400-gallon totes, used immediately	No excess inventory stored on site

Table 5.6-3R Summary of Special Handling Precautions for Large Quantity Hazardous Materials (Rev.2)

Hazardous Material and CAS No.[1]	Relative Toxicity[2] and Hazard Class[3]	RQ[4] pounds (kg)	Permissible Exposure Limit (PEL)	Storage Description; Capacity	Storage Practices and Special Handling Precautions
			[1] CAS No. – Chemical Abstracts Service registry number. This number is unique for each chemical. [2] Low toxicity is used to describe materials with an NFPA Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2. High toxicity is used to describe materials with an NFPA rating of 3. Extreme toxicity is used to describe materials with an NFPA rating of 4. [3] NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code. [4] RQ - Reportable Quantity for hazardous substance as designated under section 102(a) defined under CERCLA. (To note: As previously discussed in the text, Table 5.6-3 includes those chemicals stored or used in excess of 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases. These quantities coincide with the thresholds for reporting under California's HMBP requirements).		

F. WASTE MANAGEMENT

Palen Solar will generate non-hazardous and hazardous wastes during construction and operation. This section reviews the project's waste management plans for reducing the risks and environmental impacts associated with handling, storage, and disposal of project-related non-hazardous and hazardous wastes.

Hazardous waste consists of materials that exceed criteria for toxicity, corrosivity, ignitability, or reactivity as established by the California Department of Toxic Substances Control (DTSC).[1] State law requires hazardous waste generators to obtain U.S. EPA identification numbers and to contract with registered hazardous waste transporters to transfer hazardous waste to appropriate Class I disposal facilities. (Cal. Code Regs., tit. 22, § 66262.10 et seq.)

Non-hazardous wastes are degradable or inert materials, which do not contain concentrations of soluble pollutants that could degrade water quality and are therefore eligible for disposal at Class II or Class III disposal facilities. (Cal. Code Regs., tit. 14, § 17300 et seq.) The evidence on this topic was undisputed. (Exs., 1 § 5.16, Appendix I; 11; 27; 300, § C.13-1.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Existing Site Conditions

The certification process requires a Phase I Environmental Site Assessment (ESA) to identify potential or existing releases of hazardous substances or contamination at or adjacent to the project site, or within or adjacent to the project's linear corridors. (Ex. 300, p. C.13-8.)

The Applicant submitted a Phase I ESA in May 2009, which was prepared by its consultants in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs. The Phase I ESA did not identify any recognized environmental conditions (RECs) at or near the project site or along the linear facility corridors.[2] (Exs. 1, § 5.16.2.3, Appendix I; 300, pp. C.13-8 to C.13-10.)

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[1] California Health and Safety Code, section 25100 et seq. (Hazardous Waste Control Act of 1972, as amended) and Title 22, California Code of Regulations, Section 66261.1 et seq.

[2] A recognized environmental condition is the presence or likely presence of any hazardous substances or petroleum products where conditions indicate an existing release, past release, or

To ensure that on-site workers are protected from exposure to any unrecognized RECs, Conditions of Certification **WASTE-2** and **WASTE-3** require the project owner to employ a registered geologist or engineer with experience in remedial investigation to oversee soil excavation and construction activities. If potentially contaminated soils or underground storage tanks are discovered, the geologist or engineer must consult with appropriate regulatory agencies for remediation or other corrective actions and ensure that any contaminated soils are deposited at a Class I landfill or other designated facility. (Ex. 300, p. C.13-11.)

Although the Phase I ESA did not mention the potential of encountering unexploded ordnance (UXO) at or near the project site, evidence indicates that General Patton's Desert Training Camps were located on the site during World War II and large mock battles were conducted near the site at the California-Arizona Maneuver Area in Palen Pass. (Ex. 300, p. C.13-10.)

To ensure that on-site workers are protected from exposure to UXO during excavation and construction, Condition **WASTE-1** requires the project owner to implement an Identification, Training, and Reporting Plan. Under this plan, munitions experts will conduct geophysical surveys for UXO, train workers to avoid UXO, and supervise the removal and disposal of UXO in accordance with applicable LORS. (Ex. 300, pp. C.13-10 to C.13-11.) Condition **WORKER SAFETY-1** also includes mitigation measures designed to reduce UXO exposure to insignificant levels.

2. Construction Impacts and Mitigation

Construction of the project and its associated facilities will generate both non-hazardous and hazardous wastes. With implementation of source reduction and recycling, the amount of waste generated during project construction is expected to be minimal. (Exs. 1, § 5.16.3.1; 300, pp. C.13 11 to C.13.13.)

During construction, the project will generate an estimated 70 cubic yards per week of non-hazardous solid wastes, consisting of scrap wood, concrete, steel, glass, plastic, paper, insulating materials, aluminum, and food waste. Recyclable materials will be separated and removed to recycling facilities and non-recyclable materials will be collected and deposited at Class III landfills in accordance with applicable LORS. (Exs. 1, § 5.16.3.1, Table 5.16-5; 300, p. C.13-11.)

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a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property.

Non-hazardous liquid wastes include sanitary wastes and dust suppression, drainage, and equipment washwater. Sanitary wastes will be collected in portable, self-contained toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment washwater will be contained at designated wash areas and transported to a sanitary wastewater treatment facility. See the **Soil and Water Resources** section of this Decision for a description of project wastewater management. (Ex. 300, p. C.13-11.)

Universal wastes include an estimated 40 spent batteries over the 3-year construction period and about eight drums of aerosol cans per year. Universal waste will be accumulated for less than one year and recycled by licensed universal waste handlers. (Exs. 1, § 5.16.3.1, Table 5.16-5; 300, pp. C.13-11 to C.13-12.)

Hazardous wastes include approximately one cubic yard of empty hazardous material containers (per week); 175 gallons of solvents, used oil, paint, and oily rags (every 90 days); 1,000 gallons of heat exchanger cleaning waste (once per power plant unit); and variable amounts of flushing and cleaning wash water. Hazardous materials that cannot be recycled or used for energy recovery will be properly manifested, transported to, and deposited at a Class I hazardous waste facility by licensed hazardous waste collection and disposal companies. The disposal methods described in the evidentiary record are consistent with applicable LORS. (Exs. 1, § 5.16.3.1, Table 5.16-5; 300, p. C.13-12.)

Condition **WASTE-4** requires the project owner to implement an approved Construction Waste Management Plan to ensure compliance with applicable LORS. Condition **WASTE-5** requires the project owner to obtain a hazardous waste generator identification number from the U.S. Environmental Protection Agency (USEPA) before generating any hazardous wastes during project construction and operation. Condition **WASTE-6** requires the project owner to notify the Energy Commission's Compliance Project Manager (CPM) whenever any waste management related enforcement action is initiated by a local, state, or federal authority concerning the project or its waste disposal contractors.

3. Operation Impacts and Mitigation

During operation, the project will generate hazardous and non-hazardous wastes subject to regulatory review. (Exs. 1, § 5.16.3.2, Table 5.16-6; 300, pp. C.13-12 to C.13-15.) Applicant's Table 5.16-6, replicated below, summarizes the anticipated operation waste streams, estimated waste volumes and generation frequency, and proposed management methods.

Applicant's Table 5.16-6
Summary of Operation Waste Streams and Management Methods

Waste Stream and Classification[1]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	Waste Management Method	
				Onsite	Offsite
Used hydraulic fluid, oils and grease – Non-RCRA hazardous	HTF system, turbine, and other hydraulic equipment	100,000 gallons/year	Intermittent	Accumulated for <90 days	Recycle
Effluent from oily water separation system – Non-RCRA hazardous	Plant wash down area/oily water separation system	6,000 gallons/year	Intermittent	None	Recycle
Oil absorbent, and oil filters – Non-RCRA hazardous	Various	Ten 55-gallon drums per month	Intermittent	Accumulated for <90 days	Sent off site for recovery or disposal at Class I landfill.
Dirty shop rags – recyclable material	Maintenance cleaning operations	100 pounds per month	Routine	None	Sent to commercial laundry for cleaning and recycling.
Spent carbon – RCRA hazardous	Spent activated carbon from air pollution control of HTF vent	90,000 pounds/year	Intermittent	Contained in engineered process vessel, no accumulation outside of process	Sent off site for regeneration at a permitted management facility.
Soil contaminated with HTF (>10,000 milligrams per kilogram [mg/kg]) – Non-RCRA hazardous	Solar array equipment leaks	20 cy/year	Intermittent	Accumulated for <90 days	Sent off site for disposal at a Class I landfill or to soil thermal treatment facility.
Soil contaminated with HTF (<10,000 mg/kg) – Non-hazardous	Solar array	1,500 cy/year	Intermittent	Bioremediation or land farming at Land Treatment Unit	Disposal at permitted waste management facility.
Spent batteries – Universal Waste	Batteries containing heavy metals such as alkaline dry cell, nickel-cadmium, or lithium ion.	<20/month	Continuous	Accumulate for <1 year	Recycle
Spent batteries – Hazardous (exempt if managed as prescribed by Title 22 CCR Chapter 16).	Lead acid	40 every 2 years	Intermittent	Accumulated for <180 days	Recycle
Spent fluorescent bulbs or high-intensity discharge lamps – Universal Waste	Facility lighting	<100 per year	Intermittent	Accumulate for <1 year	Recycle
Spent demineralizer resin – Non-hazardous	Demineralizer	500 cubic feet (ft^3)	Once every 3 years	None	Recycle

Waste Stream and Classification[1]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	Waste Management Method	
				Onsite	Offsite
Reverse Osmosis (RO) Membrane Cleaning Waste – Non-hazardous	Acidic and/or caustic chemicals	6,000-12,000 gallons per cleaning	Up to 4 times per year	Adjust pH and use as dust suppressant	Disposal at permitted waste management facility.
RO system concentrate – Inert or liquid designated waste – Non-hazardous	Auxiliary cooling tower and boiler blowdown	TBD	Routine	Used for dust control (if inert waste)	Disposal at permitted waste management facility if designated waste.
Auxiliary cooling tower basin sludge – Non-hazardous	Auxiliary cooling tower	2,000 pounds/year	Annually	None	Disposal at permitted waste management facility.
Spent softener resin – Non-hazardous	Softener	1,000 ft^3	Once every 3 years	None	Recycle
Damaged parabolic mirrors – Non-hazardous	Metals and other materials	TBD	Rare	None	Recycle for metal content and/or other materials or send for landfill disposal.
Sanitary wastewater – Non-hazardous	Toilets, washrooms	5,500 gallons/day	Continuous	Septic leach field	None

Notes:1 - Classification under Title 22 CCR Division 4.5, Chapters 11, 12, and 23.
Source: Ex. 1, § 5.16.3.2, Table 5.16-6

All non-hazardous wastes will be recycled to the extent feasible, and non-recyclable wastes will be regularly transported to a local solid waste disposal facility in accordance with applicable LORS. Management of non-hazardous liquid wastes is described in the **Soil and Water Resources** section of this Decision. Although spills may occur, proper hazardous material handling and good practices will reduce spill wastes to minimal levels. A septic tank and leach field system will handle domestic sewage. Other liquid waste streams will be either recycled or sent to the on-site evaporation ponds. (Ex. 300, p. C.13-17.)

Universal waste generated during operations, including spent batteries (e.g., alkaline dry cell, nickel-cadmium, and lithium ion), spent fluorescent bulbs, and high-intensity discharge lamps will be accumulated for less than one year and recycled as appropriate. (Ex. 300, p. C.13-18.)

As indicated above in Table 5.16-6, hazardous wastes include used hydraulic fluid, oils, and grease associated with the HTF system, turbine, and other

hydraulic equipment; effluent from the oily water separation system; oil adsorbent and oil filters; spent carbon from air pollution control of the HTF vent; soil contaminated with HTF as a result of solar array equipment leaks; and spent lead acid batteries. (Exs. 1, § 5.16.3.2, Table 5.16-6; 300, p. C.13-18.)

These hazardous wastes will be stored on-site up to 90 days and subsequently transported by licensed hazardous waste haulers to authorized disposal facilities in accordance with applicable LORS. (Ex. 300, pp. C.13-18 to C.13-19.)

To ensure proper handling of operation waste streams, Condition **WASTE-7** requires the project owner to implement an Operation Waste Management Plan that identifies all hazardous and non-hazardous wastes and the methods of managing the wastes consistent with regulatory requirements and the evidentiary record. (Ex. 300, pp. C.13-15 to C.13-16.)

Occasional spills of heat transfer fluid (HTF) from either equipment failure or human error could potentially contaminate the soil. HTF spills typically spread laterally on the bare ground and soak down to a relatively shallow depth. HTF-contaminated soil is regulated as a hazardous material. (Ex. 300, pp. C.13-15 to C.13-18.) Condition **WASTE-8** requires the project owner to comply with regulatory requirements for managing accidental discharges of HTF and to ensure that hazardous concentrations of HTF-contaminated soils are not treated in the project's Land Treatment Unit (LTU), which is designed to only handle HTF soils that do not exceed hazardous threshold levels. (*Id.*)

To ensure proper cleanup and management of contamination caused by unauthorized releases of hazardous wastes, Condition **WASTE-9** requires the project owner to report, clean up, and remediate any hazardous materials spills or releases in accordance with applicable law. The **Hazardous Material Management** section of this Decision describes the requirements for hazardous material management, including spill reporting, containment, spill control, and countermeasures. Condition **WASTE-5** (hazardous waste generator identification number), *supra*, and Condition **WASTE-6** (enforcement action), *supra*, also apply to waste management during operations

Conditions **WASTE-1** through **WASTE-10** will continue to apply during closure and decommissioning of the project. (Ex. 300, p. C.13-19.)

4. Potential Impacts on Waste Disposal Facilities

Although Applicant and Staff agreed that there is no local requirement for the project to comply with the 50 percent waste diversion program established by the Integrated Waste Management Compliance Act, [3] the Energy Commission has an obligation to ensure that the large project footprint in Riverside County does not result in unnecessary or burdensome waste disposal. Therefore, we have included a requirement in Condition **WASTE-4** for the project owner to provide a reuse/recycling plan for construction and demolition materials that meets or exceeds the 50 percent waste diversion goal established by the Integrated Waste Management Compliance Act. Compliance with Condition **WASTE-4** will ensure that project wastes are managed properly and that the project's potential impacts on local landfills are maintained at insignificant levels. (Ex. 300, pp. C.13-13, C.13-32: Table C.13.14.)

There are at least seven Class III landfill facilities located in the project vicinity, including the Oasis Sanitary Landfill (in Oasis), Desert Center Landfill (in Desert Center), Blythe Sanitary Landfill (in Blythe), El Sobrante Landfill (in Corona), Badlands Sanitary Landfill (in Moreno Valley), Lamb Canyon Sanitary Landfill (in Beaumont), and Chiquita Canyon Sanitary Landfill (in Valencia). (Ex. 1, § 5.16, Table 5.16-4.) The evidence shows that with the exception of Oasis and Desert Center, there is sufficient capacity at these facilities to handle the project's construction and operation non-hazardous wastes over the life of the project, amounting to less than 1.0 percent of total landfill capacity. (*Id*., § 5.16.21; Ex. 300, p. C.13-19 and C.13-20.) To ensure that the project's impacts on landfill capacity will not be significant, Condition **WASTE-10** prohibits the project owner from depositing wastes at the Oasis and Desert Center Landfills.

Hazardous wastes will be transported to one of two available Class I landfills: Clean Harbors Buttonwillow Landfill in Kern County and Chemical Waste Management Kettleman Hills Landfill in Kings County. The Kettleman Hills facility also accepts Class II and III waste. Evidence indicates that the quantity of hazardous wastes deposited by the project will be approximately 0.1 percent of the combined capacity of the two Class I landfills. There is sufficient remaining capacity at these facilities to handle the project's hazardous wastes during its operating lifetime. In addition to the Class I landfills, there are several commercial liquid hazardous waste treatment and recycling facilities in California

[3] Public Resources Code Section 40000 et seq.; Title 14, California Code of Regulations, Section 17387 et seq.

that can process project-related hazardous wastes. (Exs. 300, p. C.13-20; 1, § 5.16.2.2.)

5. Smaller Alternative or No Project Alternative

Since the evidence establishes that the project as proposed by the Applicant would not result in any significant impacts on waste management, a smaller footprint would likely result in even fewer impacts but is not necessary to reduce impacts to insignificant levels. The “no project” alternative would not result in any project-related waste management impacts. (Ex. 300, pp. C.13-21 to C.13-27.)

6. SCE Red Bluff Substation

As indicated in the Project Description section of this Decision, SCE plans to build the Red Bluff Substation to interconnect this solar project to the grid. According to Staff, construction and operation of the substation will be evaluated in a future Environmental Impact Statement (EIS) prepared by the BLM. Detailed design information is not yet available. The Red Bluff Substation will be located on undeveloped publicly-owned desert and mountainous land with relatively few activities that could generate hazardous wastes or contaminated areas that are of specific concern in this analysis. A Phase I ESA will be required to identify the existence of RECs or the potential for soil contamination at the substation site prior to any permitting. The EIS will contain a waste management analysis of the substation site consistent with the analysis contained in this section. (Ex. 300, pp. C.13-27 to C.13-29.)

7. Cumulative Impacts and Mitigation

The evidence shows that there is potential for substantial future development of other solar and wind projects as well as other commercial/residential projects near the Palen site in Riverside County and throughout the Southern California desert region. As a result, the quantities of solid and hazardous wastes generated by this project will add to the total quantities of waste generated by new local and regional development. However, since this project’s waste stream is relatively low, recycling efforts will be prioritized, and sufficient disposal capacity is available, the resulting contribution to cumulative impacts on disposal facilities will be insignificant for both non-hazardous and hazardous waste disposal. In addition, the Mesquite Regional Class III Landfill in Imperial County with a capacity of 600 million tons is scheduled to be fully operational in

2011/2012, providing a substantial increase in capacity for waste removal in the desert region. (Ex. 300, pp. C.13-29 to C.13-31.)

8. Agency and Public Comment

The Department of Toxic Substances Control (DTSC) submitted several comments regarding the handling of hazardous wastes, contaminated soils, and spill control. (Ex. 300, pp. C.13-32 to C.13-33, Table C.13.14.) The Conditions of Certification address the DTSC's concerns and require the project owner to document compliance with all applicable LORS.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. Applicant's Phase I Environmental Site Assessment (ESA) for the site and linear corridors did not identify any recognized environmental conditions (RECs) such as soils contaminated with hazardous materials.

2. The project owner will implement appropriate characterization, disposal, and remediation measures to ensure that the potential risk of exposure to contaminated soils at the site or along the linear corridors is reduced to insignificant levels.

3. To reduce the risks of potential exposure to unexploded ordnance (UXO) on and near the site, the project owner will implement an Identification, Training, and Reporting Plan to train site workers to avoid UXO, to conduct geophysical surveys for UXO, and to investigate, remove, and dispose of any UXO found on the site.

4. The project will generate non-hazardous and hazardous wastes during excavation, construction, and operation.

5. The project will obtain a hazardous waste generator identification number from the United States Environmental Protection Agency.

6. The project will recycle non-hazardous and hazardous wastes to the extent feasible and in compliance with applicable law.

7. Hazardous wastes that cannot be recycled will be transported by registered hazardous waste transporters to appropriate Class I landfills.

8. Solid non-hazardous wastes that cannot be recycled will be deposited at Class II and III landfills in the project vicinity, except that no project wastes may be deposited at the Oasis and Desert Center Landfills.

9. Liquid wastes will be classified for appropriate disposal and managed in accordance with the Conditions of Certification listed in the **Soil and Water Resources** section of this Decision.

10. The project owner will comply with regulatory requirements for managing accidental discharges of Heat Transfer Fluid (HTC) and ensure that hazardous HTC-contaminated soils are not discharged to the on-site land treatment unit.

11. Disposal of project wastes will not result in any significant direct, indirect, or cumulative impacts on existing waste disposal facilities.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, and the waste management practices described in the evidentiary record will reduce potential adverse impacts to insignificant levels and ensure that project wastes are handled in an environmentally safe manner.

2. The management of project wastes will comply with all applicable laws, ordinances, regulations, and standards related to waste management as identified in the pertinent portions of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall prepare a UXO Identification, Training and Reporting Plan to properly train all site workers in the recognition, avoidance and reporting of military waste debris and ordnance. The project owner shall submit the plan to the Compliance Project Manager (CPM) for review and approval prior to the start of construction. The project owner shall provide documentation of the plan and provide survey results to the CPM. The plan shall contain, at a minimum, the following:

- A description of the training program outline and materials, and the qualifications of the trainers; and
- Identification of available trained experts who will oversee earth-moving activities where ordnance could be uncovered and respond to notification of discovery of any ordnance (unexploded or not); and

- Work plan to identify, recover, and remove discovered ordnance, and to complete additional field screening, including geophysical surveys to investigate adjacent areas for surface, near surface or buried ordnance in all proposed land disturbance areas.

Verification: The project owner shall submit the UXO Identification, Training and Reporting Plan to the CPM for approval no later than 30 days prior to the start of site mobilization. The results of geophysical surveys shall be submitted to the CPM within 30 days of completion of the surveys.

WASTE-2 The project owner shall provide the résumé of an experienced and qualified Professional Engineer or Professional Geologist to the Compliance Project Manager (CPM) for review and approval. The résumé shall show experience in remedial investigation and feasibility studies. This Professional Engineer or Professional Geologist shall be available during site characterization (if needed), excavation, grading, and demolition activities. 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: No later than 30 days prior to the start of site mobilization the project owner shall submit the resume to the CPM for review and approval.

WASTE-3 If potentially contaminated soil is identified during site characterization, excavation, grading, or demolition 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 (DTSC) or Regional Water Quality Control Board (RWQCB) and the Compliance Project Manager (CPM) 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 representatives of the DTSC or RWQCB for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the Professional Engineer or Professional Geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-4 The project owner shall submit a Construction Waste Management Plan to the Compliance Project Manager (CPM) 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;
- a survey of structures to be demolished that identifies the types of waste to be managed;
- a reuse/recycling plan for construction and demolition materials that meets or exceeds the 50 percent waste diversion goal established by the Integrated Waste Management Compliance Act; 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/reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no later than 30 days prior to the initiation of construction activities at the site.

WASTE-5 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency (USEPA) 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 in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to USEPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM in the next scheduled compliance report.

WASTE-6 Upon notification of any impending waste management-related enforcement action related to project site activities by any local, state, or federal authority, the project owner shall notify the CPM 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 for the project, and describe the owner's response to the impending action or if a violation has been found, how the violation will be corrected.

Verification: The project owner shall notify the CPM in writing within 10 days of receiving written notice from authorities 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 as a result of a finalized action against the project.

WASTE-7 The project owner shall submit the Operation Waste Management Plan to the CPM 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 ensure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- information and summary records of contacts 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 upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no later than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM 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 document all releases and spills of Heat Transfer Fluid (HTF) as described in Condition **WASTE-9** and report only those that are 42 gallons or more, the CERCLA reportable quantity, as required in the **Soil and Water Resources** section of this Decision. Cleanup and temporary staging of HTF-contaminated soils shall be conducted in accordance with the approved Operation Waste Management Plan required in Condition **WASTE-7**. The project owner shall sample HTF-contaminated soil from CERCLA reportable incidents involving 42 gallons or more in accordance with the United States Environmental Protection Agency's (USEPA) current version of "Test Methods for Evaluating Solid Waste" (SW-846). Samples shall be analyzed in accordance with USEPA Method 8015 or other method to be reviewed and approved by DTSC and the CPM.

Within 28 days of an HTF spill, the project owner shall provide the results of the analyses and their assessment of whether the HTF-contaminated soil is considered hazardous or non-hazardous to the Department of Toxic Substances Control (DTSC) and the CPM for review and approval.

If DTSC, and the CPM determine the HTF-contaminated soil is considered hazardous, it shall be disposed of in accordance with California Health and Safety Code Section 25203 and procedures outlined in the approved Operation Waste Management Plan required in Condition **WASTE-7** and reported to the CPM in accordance with Condition **WASTE-9**.

If DTSC and the CPM determine the HTF-contaminated soil is considered non-hazardous it shall be retained in the land treatment unit (LTU) and treated on-site in accordance with the Waste Discharge Requirements contained in the **Soil and Water Resources** section of this Decision.

Verification: The project owner shall submit to the CPM and the DTSC for approval the project owner's assessment of whether the HTF contaminated soil is considered hazardous or non-hazardous under state regulations. HTF-contaminated soil that exceeds the regulatory hazardous waste levels must be disposed of in accordance with California Health and Safety Code Section 25203. HTF-contaminated soil that does not exceed the hazardous waste levels may be discharged to the on-site LTU. For discharges into the LTU, the project owner shall comply with the Waste Discharge Requirements contained in the **Soil and Water Resources** section of this Decision.

WASTE-9 The project owner shall ensure that all accidental spills or unauthorized releases of hazardous substances, hazardous materials, and hazardous waste are documented and remediated, and that wastes generated from accidental spills and unauthorized releases are properly managed and disposed of in accordance with all applicable federal, state, and local LORS and requirements. For the purpose of

this Condition of Certification, “release” shall have the definition in Title 40 of the Code of Federal Regulations, Part 302.3.

Verification: No later than 30 days of the date that a project-related hazardous substance release was discovered, the project manager shall provide a copy of the accidental spill or unauthorized release documentation to the CPM.

The project owner shall document management of all accidental spills and unauthorized releases of hazardous substances, hazardous materials, and 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.

WASTE-10 The project owner shall ensure that **none** of the project’s non-hazardous, non-recyclable, and non-reusable construction and operation wastes shall be diverted to or deposited at either the Desert Center Landfill or the Oasis Sanitary Landfill.

Verification: The project owner shall provide documentation of all project-related solid waste disposal activities and identify the landfills receiving project-related wastes in the Annual Compliance Report submitted to the CPM.

VI. ENVIRONMENTAL ASSESSMENT

A. BIOLOGICAL RESOURCES

This section focuses on the biological resources associated with the Palen Solar Power Project (PSPP), including potential impacts related to construction, operation and decommissioning of the proposed Project and select alternatives. The following analysis describes the biological resources at the proposed Project and alternative configurations on the proposed project site, and applicable off-site areas; identifies potential Project-related direct, indirect and cumulative impacts; and provides appropriate mitigation. Specifically, mitigation measures are included in the Conditions of Certification to reduce Project-related impacts and ensure compliance with all applicable LORS to the maximum extent feasible.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Setting

Proposed Project

The Applicant, Palen Solar I, LLC (PSI), proposes to develop and operate a 500 megawatt (MW) solar energy facility called PSPP (or Project) in eastern Riverside County, approximately 10 miles east of the community of Desert Center, 0.5 mile north of U.S. Interstate 10 (I-10), and less than 2 miles from the southern edge of Palen Dry Lake. The Project consists of a concentrating solar thermal electric generating facility comprised of two independent solar plants (units), each of which would have a nominal capacity of 250 MW. The proposed Project includes a right-of-way (ROW) area of approximately 5,200 acres on generally level desert terrain managed by the U.S. Bureau of Land Management (BLM). The portion of the ROW area proposed for disturbance encompasses approximately 4,024 acres, including the power plant site, access roads, and an associated off-site transmission line corridor. The transmission line corridor would extend south from the Project site and across I-10, and would connect to one of the two potential sites identified for the planned Southern California Edison (SCE) Red Bluff Substation.

Reconfigured Alternatives

Based on the nature and extent of potential impacts to a number of key biological resources from the proposed Project (including sand transport corridors and related species), two alternative configurations are also evaluated in the following analysis. These alternatives, Reconfigured Alternative 2 and Reconfigured Alternative 3, are in the same general location as the proposed Project site, but include reconfigured boundaries intended to avoid or reduce impacts to targeted biological resources. Both alternative configurations would encompass a 500 MW solar energy facility with similar on- and off-site facilities as the proposed Project, with associated disturbance areas of approximately 4,366 acres (Reconfigured Alternative 2) and 4,330 acres (Reconfigured Alternative 3). Reconfigured Alternatives 2 and 3 are described more fully in the **ALTERNATIVES** portion of this Decision.

The proposed project, its alternative configurations, and alternative sites are located within the Colorado Desert, which is a sub-section of the Sonoran Desert. The Sonoran Desert of southern California has a uniquely "tropical" warm desert climate, influenced by monsoonal summer rains. This generates a bi-modal rainfall pattern, wherein two rainy seasons occur; one in the winter, as occurs in much of southern California, and a second in the summer months from monsoonal storms (which tend to be of shorter duration and higher intensity than winter storms). This unique climate contributes to the presence of a number of rare and endemic plants and vegetation communities specially adapted to the bi-modal rainfall pattern and not found elsewhere in California. These include microphyll (small-leaved) woodlands, palm oases, and a number of summer annuals that only germinate after a significant warm summer rain.

The Project, its alternative configurations, and alternative sites are within Chuckwalla Valley, a region of active aeolian (wind-blown) sand migration and deposition. Sand migration in the Chuckwalla Valley region occurs primarily in three distinct corridors, including two corridors that merge just east of the proposed Project site. Specifically, these include the Palen Valley Corridor, which trends north-south near the eastern edge of the proposed Project site, and the Palen Dry Lake-Chuckwalla Valley Corridor, which runs northwest-southeast through the northeastern corner of the proposed Project site. (Ex. 301, pp. C.2-15, C.2-29 - C.2-30, and Biological Resources **Appendix C - Figures 20b, 26 and 28**.) The associated sand dune habitats are essential to the existence of numerous specialized and often sensitive species, including the MFTL (*Uma scoparia*). Chuckwalla Valley exhibits interior drainage (i.e., with no outlet to the

ocean), and associated flows often terminate in one of many local playas (dry lake beds). Specifically, the western portion of the valley drains to Palen Dry Lake.

The proposed Project site and vicinity is within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) area, a region that includes most of the California portion of the Sonoran Desert ecosystem. Two associated wildlife habitat management areas (WHMAs) occur locally: the Palen-Ford WHMA, and the Desert Wildlife Management Area (DWMA) Connectivity WHMA. Management emphasis for the Palen-Ford WHMA centers on the dunes and playas within the Palen-Ford dune system, while the DWMA Connectivity WHMA is focused on the geographic connectivity of the desert tortoise (*Gopherus agassizii*) between the conservation areas located east of Desert Center (i.e., the Chuckwalla DWMA and the Chuckwalla Mountains Wilderness area north of I-10). Additional local management designations include the Palen-McCoy Wilderness approximately 3 miles to the northeast, the Chuckwalla DWMA approximately 2 miles to the south, and the Palen Dry Lake Area of Critical Environmental Concern (ACEC) which borders the proposed Project site to the east. (Ex. 301, pp. C.2-15, C.2-16.)

2. Existing Biological Resources

The assessment of biological resources includes the following areas: (1) the approximately 4,024-acre proposed Project disturbance area and an associated buffer area, with a combined Biological Resources Study Area (Study Area) of 14,771 acres; (2) the approximately 4,366-acre Reconfigured Alternative 2 disturbance area and similar Study Area as noted for the proposed Project; and (3) the approximately 4,330-acre Reconfigured Alternative 3 disturbance area and similar Study Area as noted above. Seven native vegetation communities occur within the Study Area, including desert dry wash woodland (also known as microphyll woodland), unvegetated ephemeral dry wash, active desert dunes, stabilized and partially stabilized desert dunes, desert sink scrub, dry lake bed (playa), and Sonoran creosote bush scrub. Four of these habitats also occur within the proposed Project and Reconfigured Alternative disturbance areas as summarized in **Tables 1 and 2**, with Sonoran creosote bush scrub the most prevalent. Five of the seven identified Study Area communities are identified as sensitive by the California Department of Fish and Game (CDFG) or in NECO, including desert dry wash woodland, active desert dunes, desert sink scrub, dry lake bed, and stabilized and partially stabilized desert dunes. Brief descriptions

of the four native vegetation communities within the proposed Project site are provided below.

Biological Resources Table 1
Natural Communities/Cover Types – Proposed Project Site and Study Area

Vegetation Communities/Cover Type within Biological Resources Study Area	Proposed Project Disturbance Area	One-mile Buffer	Study Area
Riparian			
Desert dry wash woodland	148	699	846
Unvegetated ephemeral dry wash	164	61	225
Subtotal Riparian	*312*	*760*	*1,071*
Upland			
Active desert dunes	0	684	684
Desert sink scrub	0	9	9
Dry lake bed	0	270	270
Sonoran creosote bush scrub	3,422	7,423	10,845
Stabilized and partially stabilized desert dunes	285	625	910
Subtotal Upland	*3,707*	*9,011*	*12,718*
Other Cover Types			
Agricultural Land	3	830	833
Developed	2	147	149
Subtotal Other Cover Types	*5*	*977*	*982*
Total Acres	**4,024**	**10,748**	**14,771**

Source: (Ex. 301: p. C.2-17.)

Riparian Communities

Both of the identified riparian communities are identified as "Waters of the State" and are therefore under the jurisdiction of the CDFG. The Applicant has submitted an application to the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA), requesting a jurisdictional determination (JD) of isolated waters (non-jurisdictional waters of the U.S.). Specifically, the application has assumed there are no potential jurisdictional waters of the U.S. within the proposed Project site, based on the fact that the features occur in a closed basin with no identifiable outlet and have no direct hydrologic connection to any navigable waters. Both vegetated and unvegetated dry washes include unique habitat that is distinct from the surrounding uplands, providing more continuous vegetation cover and microtopographic diversity, as

well as migration corridors and refuge for a variety of wildlife. Both the wash-dependent and upland vegetation along these washes drive food webs, provide seeds for regeneration, habitat for wildlife, and access to water, as well as creating cooler, more hospitable microclimatic conditions essential for a number of plant and animal species. (Ex. 301, pp. C.2-20 – C.2-21.)

Biological Resources Table 2
Natural Communities/Cover Types – Reconfigured Alternatives 2 and 3

Vegetation Communities/Cover Type within Biological Reconfigured Alternatives 2 and 3 Disturbance Areas	Reconfigured Alternative 2	Reconfigured Alternative 3
Riparian		
Desert dry wash woodland	208	198
Unvegetated ephemeral dry wash	180	168
Subtotal Riparian	*388*	*366*
Upland		
Active desert dunes	0	0
Desert sink scrub	0	0
Dry lake bed	0	0
Sonoran creosote bush scrub	3,817	3,771
Stabilized and partially stabilized desert dunes	156	188
Subtotal Upland	*3,973*	*3,959*
Other Cover Types		
Agricultural Land	3	3
Developed	2	2
Subtotal Other Cover Types	*5*	*5*
Total Acres	**4,366**	**4,330**

Source: (Ex. 301: p. C.2-146.)

Desert Dry wash Woodland

Desert dry wash woodland is identified as a sensitive vegetation community by the California Natural Diversity Database (CNDDB) and the BLM. This community consists of open to densely covered, drought-deciduous, microphyll riparian scrub woodland, and often supports braided wash channels that change patterns and flow directions following surface flow events. This community occupies the major washes that traverse the proposed Project site and is dominated by an open tree layer of ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia florida*), honey mesquite (*Prosopis glandulosa*), and smoke tree (*Psorothamnus spinosus*); with an understory of big galleta grass (*Pleuraphis*

rigida) and desert starvine (*Brandegea bigelovii*) intermixed with creosote bush (*Larrea tridentata*) and Russian thistle (*Salsola tragus*). Desert dry wash woodland provides value to various species of wildlife in the form of food, cover, dispersal, and refuge habitat (Ex. 301, p. C.2-24.)

Unvegetated Ephemeral Dry Wash

Unvegetated dry washes include numerous smaller streams consisting largely of compound channels with highly variable flow pathways contained within broad floodplains. Vegetative cover is typically sparse and consists primarily of mixed upland and wash-dependent shrubs and herbs, with widely scattered and small-statured individual ironwood trees. These ephemeral streams provide movement corridors for small and large mammals, and provide a seasonal water source not available in the surrounding dry uplands. (Ex.301, p. C.2-24.)

Upland Communities

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote scrub habitat of the Colorado Desert. This habitat characterizes the majority of the Study Area and proposed Project site, and intergrades with desert dry wash woodland along washes. Areas of desert pavement occur in this habitat where vegetation density is lower, with cobbles ranging in size from one to three inches. Within the Study Area, this community is characterized by sandy soils with a shallow clay pan and a high percentage of non-native invasive plant species (also referred to as noxious weeds), especially in the southern portion of the Study Area. The high occurrence of noxious weeds is associated with previous disturbance, with principal species including Sahara mustard (*Brassica tournefortii*), Mediterranean grass (*Schismus* sp.), and Russian thistle. (Ex.301, pp. C.2-17 to C.2-19.)

Stabilized and Partially Stabilized Desert Dunes

Stabilized and partially stabilized desert dunes are considered sensitive by the CNDDB and the BLM. These dune systems are stabilized or partially stabilized by evergreen and/or deciduous shrubs and grasses, and typically retain water just below the sand surface which allows deep-rooted perennial vegetation to survive during longer drought periods. Desert sand dunes are unique insular habitats that often support plants, mammals, reptiles and insects that are restricted to sand dunes. In the vicinity of the proposed Project site, this habitat

occurs along the margins of Palen Dry Lake and extends into the associated disturbance areas. Within the Study Area, dominant plants of this community include mesquite, dye bush (*Psorothamnus emoryi*), and desert milk-vetch (*Astragalus aridus*). The dunes within the Study area are an important habitat type for a number of sensitive species, including the MFTL. Additionally, a potentially new taxon of four-wing saltbush (*Atriplex canescens ssp.)* has been documented on the dunes just outside the Project-related disturbance areas. (Ex.301, pp. C.2-25 and C.2-26.)

Groundwater-dependent Vegetation Communities

Groundwater-dependent ecosystems (GDEs) are an important component of biological diversity in the California desert region. Because they are rare or limited in distribution, they often support rare or special-status plants and animals. All GDEs depend on groundwater for all or part of their survival. A number of GDEs were observed or documented to occur locally and could potentially be affected by proposed groundwater pumping within the proposed Project site, (with discussion of potential impacts to GDEs from proposed groundwater pumping provided below under Item 3, Direct/Indirect Impacts and Mitigation). Specifically, these include mesquite "bosques" (groves) along the northwest and southwest margins of Palen Dry Lake, certain native trees associated with the previously described desert dry wash woodland habitat, sparsely vegetated playa lake beds, stands of jackass clover (*Wislizenia refracta ssp. Refracta*), stabilized and partially stabilized dunes, and desert sink scrub communities located along the margins of Palen Dry Lake. All of these natural communities are recognized as rare or sensitive by the CDFG, CNDDB and/or BLM. Plant species associated with GDEs within 2 to 3 miles of the proposed Project site are dominated or defined by phreatopytes, deep-rooted plants that obtain a significant portion of their water needs from groundwater. The phreatopytes known to occur in the Project area are mostly "facultative phreatopytes", or deep rooted plant species that tap into groundwater to satisfy at least some portion of their environmental water requirement, but will also inhabit areas where their water requirements can be met by soil moisture reserves alone. (Ex.301, pp. C.2-26 to C.2-29, and C.2-83 to C.2-87.)

Sand Dune Transport System

The northeastern portions of the proposed Project site and reconfigured alternatives extend into the Palen Dry Lake-Chuckwalla sand transport corridor to varying degrees. Portions of three associated sand transport zones grade from

southwest to northeast within the proposed Project site, with these zone designations based on the nature and quantity of related sand transport. (Ex.301, Biological Resources Appendix C - Figures 22, 26, 28 and 35.) The least sandy zone (Zone IV) is within the western portion of the proposed Project site, and consists almost entirely of a stable, coarse gravel alluvial fan surface. The associated sand dunes have subsequently degraded due to wind erosion and deflation (i.e., where sand is removed by wind erosion but not replaced). Deflation of the relict dunes leaves behind the more resistant alluvial deposits as a protective lag of gravel. In many places the lag has formed desert varnish, a black coloration on the exposed surface of gravel particles. The presence of desert varnish suggests that portions of this surface have been stable and exposed in the current condition for many hundreds to thousands of years. (Ex. 301, p. C.2-29.)

A more active wind-blown sand area with relatively shallow sand deposits (Zone III) occurs to the Northeast on the lower alluvial fan. This is an area of shallow vegetated sand dunes with a transition from creosote bush to grasses. The dunes are in relative equilibrium, with sand loss from wind erosion generally matched by deposition of sand from upwind sources.

The northeastern-most portion of the proposed Project site encompasses an area of deeper and more active vegetated sand dunes (Zone II). This area is characterized by hummocky vegetated dunes with greater topographic expression than areas to the west, implying that they are more actively supplied by sand. The portions of the disturbance areas associated with Reconfigured Alternatives 2 and 3 that extend into Zone II are substantially smaller than that for the proposed Project. The associated implications related to sand transport effects from all three design scenarios are described below under Item 3, Direct/Indirect Impacts and Mitigation.

The most active area of sand transport is Zone I, which is located further to the northeast and outside of the disturbance areas for the proposed Project site and reconfigured alternatives.

Non-native Habitats and Noxious Weeds

Non-native habitats within the Study Area include agricultural and developed areas, with these habitats limited to approximately five acres within the disturbance areas of the proposed Project site and Reconfigured Alternatives #2 and #3 (refer to **Tables 1 and 2**). These areas, along with other conditions such

as gathering/channeling water, often create favorable conditions for the occurrence and spread of noxious weeds. Noxious weeds are generally defined to include non-native plants on the weed lists of the California Department of Food and Agriculture (CDFA) and California Invasive Plant Council (Cal-IPC), or weeds of special concern identified by the BLM. They are of particular concern in wild lands because of their potential to degrade habitat and disrupt the ecological functions of an area. Four noxious weed species were observed within the Study Area, including Sahara mustard, Russian thistle, Mediterranean tamarisk (or salt cedar, *Tamarix ramosissima*), and Mediterranean grass (*Schismus arabicus*). (Ex. 301, pp. C.2-18, C.2-19.)

Special-status Species

Special-status species are plant and wildlife species that have been afforded special recognition by federal, state, or local resource agencies or organizations. **Table 3** lists all special-status species evaluated during the Project analysis that are known to occur or could potentially occur in the Project Study Area. Special-status species observed during the 2009 field surveys are indicated by **bold-face type**.

Biological Resources Table 3
Special-Status Species Known to or With Potential to Occur in the Palen Solar Power Project Biological Resources Study Area

PLANTS		
Common Name	**Scientific Name**	**Status State/Fed/CNPS/BLM/ Global Rank/State Rank**
Chaparral sand verbena	*Abronia villosa var. aurita*	__/__/1B.1/BLM Sensitive/G5T3T4/S2.1
Angel trumpets	*Acleisanthes longiflora*	__/__/2.3/__/G5/S1.3
Desert sand parsley	*Ammoselinum giganteum*	__/__/2.3/__/G2G3/SH
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2.2/__/G5/S2
Harwood's milk-vetch	***Astragalus insularis var. harwoodii***	**__/__/2.2/__/G5T3/S2.2?**
Coachella Valley milk-vetch	*Astragalus lentiginosus var. coachellae*	__/FE/1B.2./BLM Sensitive/G5T2/S2.1

PLANTS		
Common Name	**Scientific Name**	**Status State/Fed/CNPS/BLM/ Global Rank/State Rank**
California ayenia	*Ayenia compacta*	SE/__/2.3/__/G4/S3.3
Pink fairy duster	*Calliandra eriophylla*	__/__/2.3/__/G5/S2.3
Sand evening-primrose	*Camissonia arenaria*	__/__/2.2/__/G4?/S2
Crucifixion thorn	*Castela emoryi*	__/__/2.3/__/G3/S2.2
Abram's spurge	*Chamaesyce abramsiana*	__/__/2.2/__/G4/S1.2
Arizona spurge	*Chamaesyce arizonica*	SR/__/2.3/__/G5/S1.3
Flat-seeded spurge	***Chamaesyce platysperma***	**__/__/1B.2/ Sensitive/G3/S1.2?**
Las Animas colubrina	*Colubrina californica*	__/__/2.3/__/G4/S2S3.3
Spiny abrojo/Bitter snakeweed	*Condalia globosa var. pubescens*	__/__/4.2/__/G5T3T4/S3.2
Foxtail cactus	*Coryphantha alversonii*	__/__/4.3/__/G3/S3.2
Ribbed cryptantha	***Cryptantha costata***	**__/__/4.3/__/G4G5/S3.3**
Winged cryptantha	*Cryptantha holoptera*	__/__/4.3/__/G3G4/S3?
Wiggins' cholla	*Cylindropuntia wigginsii (syn=Opuntia wigginsii)*	__/__/3.3/__/G3?Q/S1.2?
Utah vining milkweed	*Cynanchum utahense*	__/__/4.2/__/G4/S3.2
Glandular ditaxis	*Ditaxis claryana*	__/__/2.2/__/G4G5/S1S2
California ditaxis	***Ditaxis serrata var. californica***	**__/__/3.2/__/G5T2T3/S2.2**
Cottontop cactus	***Echinocactus polycephalus var. polycephalus***	**__/__/__/__/__/__**
Harwood's eriastrum	***Eriastrum harwoodii***	**__/__/1B.2/ Sensitive/G2/S2**
Morning-glory heliotrope	*Heliotropium convolvulaceum*	**__/__/__/__/__/__**
California satintail	*Imperata brevifolia*	__/__/2.1__/G2/S2.1
Pink velvet mallow	*Horsfordia alata*	__/__/4.3/__/G4/S3.3

PLANTS		
Common Name	**Scientific Name**	**Status State/Fed/CNPS/BLM/ Global Rank/State Rank**
Bitter hymenoxys	*Hymenoxys odorata*	__/__/2/__/G5/S2
Spearleaf	*Matelea parvifolia*	__/__/2.3/__/G5?/S2.2
Argus blazing star[1]	*Mentzelia puberula*	__/__/__/__/__/__
Slender woolly-heads	*Nemacaulis denudata var. gracilis*	__/__/2.2/__/G3G4T3?/S2 S3
Lobed cherry	*Physalis lobata*	__/__/2.3/__/G5/S1.3
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3
Desert unicorn plant	*Proboscidea althaeifolia*	__/__/4.3/__/G5/S3.3
Orocopia sage	***Salvia greatae***	**__/__/1B.3./Sensitive/G2/ S2.2**
Desert spikemoss	*Selaginella eremophila*	__/__/2.2./__/G4/S2.2?
Cove's cassia	*Senna covesii*	__/__/2.2/__/G5?/S2.2
Mesquite nest straw	*Stylocline sonorensis*	__/__/1A/__/G3G5/SX
Dwarf germander	*Teucrium cubense ssp. depressum*	__/__/2.2/__/G4G5T3T4/S 2
Jackass clover	*Wislizenia refracta ssp. refracta*	__/__/2.2/__/G5T5?/S1.2?
Palmer's jackass clover[2]	*Wislizenia refracta ssp. palmeri*	__/__/Proposed 1B/ __/__/__
"Palen Lake atriplex"[3]	***Atriplex* sp. nov. J. Andre (*Atriplex canescens* ssp*?*)**	**__/_ / _/Sensitive/__/__**

[1] Proposed new addition to the CNPS Inventory
[2] Proposed new addition to the CNPS Inventory
[3] Proposed new taxon (Andre, pers. comm.). BLM may consider proposed new taxa as BLM Sensitive

WILDLIFE		
Common Name	**Scientific Name**	**Status State/Federal/BLM**
Reptiles/Amphibians		
Desert tortoise	***Gopherus agassizii***	**ST/FT/__**
Couch's spadefoot toad	*Scaphiopus couchii*	CSC/__/BLM Sensitive
Mojave fringe-toed lizard	***Uma scoparia***	**CSC//__Sensitive**
Birds		
Western burrowing owl	***Athene cunicularia hypugaea***	**CSC/BCC/Sensitive**
Golden eagle	*Aquila chrysaetos*	CFP/__/Sensitive
Short-eared owl	*Asio flammeus*	CSC/__/__
Ferruginous hawk	***Buteo regalis***	**WL//__Sensitive**
Swainson's hawk	***Buteo swainsoni***	**ST**/__/__
Prairie falcon	***Falco mexicanus***	**WL**/__/__
American peregrine falcon	*Falco peregrinus anatum*	CFP/__/__
Vaux's swift	***Chaetura vauxi***	**CSC**/__/__
Mountain plover	*Charadrius montanus*	CSC/Sensitive
Northern harrier	***Circus cyaneus***	**CSC**/__/__
Gilded flicker	*Colaptes chrysoides*	SE/__/__
Yellow warbler	*Dendroica petechia sonorana*	CSC/__/__
California horned lark	***Eremophila alpestris actia***	**WL**/__/__
Yellow-breasted chat	*Icteria virens*	CSC/__/__
Loggerhead shrike	***Lanius ludovicianus***	**CSC/BCC/__**
Gila woodpecker	*Melanerpes uropygialis*	SE/__/__
Black-tailed gnatcatcher	*Polioptila melanura*	__/__/__
Purple martin	***Progne subis***	**CSC**/__/__

WILDLIFE		
Common Name	**Scientific Name**	**Status State/Federal/BLM**
Vermilion flycatcher	*Pyrocephalus rubinus*	CSC/__/__
Bendire's thrasher	*Toxostoma bendirei*	CSC/__/BLM Sensitive
Crissal thrasher	*Toxostoma crissale*	CSC/__/__
Le Conte's thrasher	***Toxostoma lecontei***	**WL/BCC/Sensitive**

Mammals		
Pallid bat	*Antrozous pallidus*	CSC/__ / Sensitive
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC/__/ Sensitive
Burro	*Equus asinus*	__/__
Spotted bat	*Euderma maculatum*	CSC/__/ Sensitive
Western mastiff bat	*Eumops perotis californicus*	CSC/__/ Sensitive
Hoary bat	*Lasiurus cinereus*	__/__/__
California leaf-nosed bat	*Macrotus californicus*	CSC/__/ Sensitive
Arizona myotis	*Myotis occultus*	CSC/__/__
Cave myotis	*Myotis velifer*	CSC//__/ Sensitive
Yuma myotis	*Myotis yumanensis*	__/__/ Sensitive
Colorado Valley woodrat	*Neotoma albigula venusta*	__/__
Pocket free-tailed bat	*Nyctinomops femorosaccus*	CSC/__/__
Big free-tailed bat	*Nyctinomops macrotis*	CSC/__/__
Burro deer	***Odocoileus hemionus eremicus***	**__/__/__**
Nelson's bighorn sheep	*Ovis canadensis nelson*	__/__/ Sensitive
Yuma mountain lion	*Puma concolor browni*	CSC/__/__
American badger	***Taxidea taxus***	**CSC/__/__**
Desert kit fox	***Vulpes macrotis arsipus***	**__/__/__**

Source: (Ex. 301, pp. C.2-31 to C.2-34.)

Status Codes:

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 non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities <www.fws.gov/migratorybirds/reports/BCC2002.pdf>

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

CFP = California Fully Protected

SE = State listed as endangered

ST = State listed as threatened

SR = State listed as rare

WL = State watch list

California Native Plant Society

List 1B = Rare, threatened, or endangered in California and elsewhere

List 2 = Rare, threatened, or endangered in California but more common elsewhere

List 3 = Plants which need more information

List 4 = Limited distribution – a watch list

0.1 = Seriously threatened in California (high degree/immediacy of threat)

0.2 = Fairly threatened in California (moderate degree/immediacy of threat)

0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Bureau of Land Management

BLM Sensitive = Species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. BLM Sensitive species also include all Federal Candidate species and Federal Delisted species which were so designated within the last 5 years and CNPS List 1B plant species that occur on BLM lands. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf.

Global Rank/State Rank

Global rank (G-rank) and State rank (S-rank) is a reflection of the overall condition of an element throughout its global (or State) range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values. State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical

G1 or S1 = Critically imperiled; Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals

G2 or S2 = Imperiled; 6-20 EOs OR 1,000-3,000 individuals

G3 or S3 = Rare, uncommon or threatened, but not immediately imperiled; 21-100 EOs OR 3,000-10,000 individuals

G4 or S4 = Not rare and apparently secure, but with cause for long-term concern; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.

G5 or S5= Demonstrably widespread, abundant, and secure.

Threat Rank

.1 = very threatened

.2 = threatened

.3 = no current threats known

The Revised Staff Assessment provides detailed descriptions of the special-status floral and faunal species observed within the Project Study Area during 2009 and 2010 surveys, including ranges, observed locations, quantified population data, and physical characteristics. (Ex. 301, pp. C.2-34 - C.2-67.) The results of Fall, 2010 plant surveys are set forth in a report dated October 26, 2010. (Ex. 64.)

3. Direct/Indirect Impacts and Mitigation

Direct impacts are those resulting directly from project activities (e.g., excavation and grading), and occur at the same time and location as those activities. Indirect impacts are also caused by a project, but can occur later in time and/or at more distant locations, while still resulting from project activities. The potential impacts discussed in this analysis are those most likely to be associated with construction and operation of the proposed Project and Reconfigured Alternatives 2 and 3. Due to the slow recovery rates of plant communities in desert ecosystems, Project-related impacts are 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 five years. (Ex. 301, p. C.2-68.)

Summary descriptions of direct/indirect habitat impacts and recommended mitigation for the proposed Project and Reconfigured Alternatives 2 and 3 are shown in **Tables 4 through 6**. These tables are followed by discussions of direct and indirect impacts to biological resources, with a separate analysis of potential cumulative impacts provided below under Item 6, Cumulative Impacts.

Biological Resources Table 4
Acreage of Direct and Indirect Impacts to Biological Resources and Recommended Mitigation for the Proposed Project

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Desert Tortoise Habitat			
Within Critical Habitat	201	5:1	1,006
Outside Critical Habitat	3,537	1:1	3,537
Desert Tortoise Total	**3,738**	—	**4,542**

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Mojave Fringe-toed Lizard (MFTL) – Direct Impacts			
Stabilized and partially stabilized sand dunes – direct impacts	285	3:1	855
Non-dune habitats occupied by MTFL (sand fields vegetated with sparse creosote bush scrub)	1,496	1:1	1,496
Mojave Fringe-Toed Lizard – Indirect Impacts	1,113	0.5:1	557
MTFL Total	**2,894**	—	**2,908**
State Waters - Direct Impacts			
Desert Dry Wash Woodland	148	3:1	444
Unvegetated Ephemeral Dry Wash	164	1:1	164
State Waters Subtotal	***312***	**—**	***608***
State Waters – Indirect Impacts from Changes in Hydrology			
Desert Dry Wash Woodland	0	1.5:1	0
Unvegetated Ephemeral Dry Wash	32	0.5:1	16
State Waters Subtotal	***32***	**—**	***16***
State Waters Total	**344**	—	**624**
Burrowing Owl Habitat – two pairs, four individuals, 19.5 acres each (per CBOC guidelines)	**78**	**n/a**	**78**

Source: (Ex. 301, pp. C.2-72 and C.2-73.)

Biological Resources Table 5
Acreage of Direct and Indirect Impacts to Biological Resources and Recommended Mitigation for Reconfigured Alternative 2

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Desert Tortoise Habitat			
Within Critical Habitat	228	5:1	1,140
Outside Critical Habitat	3,977	1:1	3,977
Desert Tortoise Total	**4,205**	—	**5,117**

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Mojave Fringe-toed Lizard (MFTL) – Direct Impacts			
Stabilized and partially stabilized sand dunes – direct impacts	156	3:1	468
Non-dune habitats occupied by MTFL (sand fields vegetated with sparse creosote bush scrub)	1,347	1:1	1,347
Mojave Fringe-Toed Lizard – Indirect Impacts	144	0.5:1	72
MTFL Total	**1,647**	—	**1,887**
State Waters - Direct Impacts			
Desert Dry Wash Woodland	208	3:1	624
Unvegetated Ephemeral Dry Wash	180	1:1	180
State Waters Subtotal	***388***	**—**	***804***
State Waters – Indirect Impacts from Changes in Hydrology			
Desert Dry Wash Woodland	0	1.5:1	0
Unvegetated Ephemeral Dry Wash	19	0.5:1	10
State Waters Subtotal	***19***	**—**	***10***
State Waters Total	**407**	—	**814**
Burrowing Owl Habitat – two pairs, four individuals, 19.5 acres each (per CBOC guidelines)	**78**	**n/a**	**78**

Source: (Ex. 301, pp. C.2-150 - C.2-153, and C.2-147, C.2-148.)

Biological Resources Table 6
Acreage of Direct and Indirect Impacts to Biological Resources and Recommended Mitigation for Reconfigured Alternative 3

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Desert Tortoise Habitat			
Within Critical Habitat	228	5:1	1,140
Outside Critical Habitat	3,909	1:1	3,909
Desert Tortoise Total	**4,137**	—	**5,049**

Resource	Acres Impacted	Mitigation Ratio	Recommended Mitigation Acreage
Mojave Fringe-toed Lizard (MFTL) – Direct Impacts			
Stabilized and partially stabilized sand dunes – direct impacts	188	3:1	564
Non-dune habitats occupied by MTFL (sand fields vegetated with sparse creosote bush scrub)	1,354	1:1	1,354
Mojave Fringe-Toed Lizard – Indirect Impacts	94	0.5:1	47
MTFL Total	**1,636**	—	**1,965**
State Waters - Direct Impacts			
Desert Dry Wash Woodland	198	3:1	594
Unvegetated Ephemeral Dry Wash	168	1:1	168
State Waters Subtotal	***366***	**—**	***762***
State Waters – Indirect Impacts from Changes in Hydrology			
Desert Dry Wash Woodland	0	1.5:1	0
Unvegetated Ephemeral Dry Wash	18	0.5:1	9
State Waters Subtotal	***18***	**—**	***9***
State Waters Total	**384**	—	**771**
Burrowing Owl Habitat – two pairs, four individuals, 19.5 acres each (per CBOC guidelines)	**78**	**n/a**	**78**

Source: (Ex. 301, pp. C.2-153 - C.2-155, C.2-147, C.2-148.)

Waters of the State

Grading within the disturbance areas and related ephemeral drainages would directly impact approximately 312 acres of State jurisdictional waters for the proposed Project, 388 acres for Reconfigured Alternative 2, and 366 acres for Reconfigured Alternative 3. The described impacts would eliminate the hydrological, biogeochemical, vegetation and wildlife functions of these drainages. Indirect impacts to State waters associated with desert washes located downstream of the proposed Project site would also occur as a result of changes to upstream hydrology. Specifically, the evidence indicates that downslope vegetation in these washes would receive lower or higher volumes and velocities of water than current conditions, which could significantly alter the

related hydrology and wash-dependent vegetation. Other potential indirect effects include erosion and resulting root exposure leading to the eventual death of vegetation in downslope areas, associated downstream sedimentation, and head-cutting and erosion in upstream washes. As shown in **Tables 4 through 6**, potential indirect impacts to State waters would total approximately 32 acres for the proposed Project, 19 acres for Reconfigured Alternative 2, and 18 acres for Reconfigured Alternative 3. Additional discussion of local hydrological conditions and related development implications is provided in the **Soil and Water Resources** section of this Decision.

The evidence indicates that the described impacts to State jurisdictional waters from the proposed Project or Reconfigured Alternatives 2 and 3 would be significant. Proposed mitigation includes the acquisition and management of an appropriate acreage of State waters (based on the area of State waters impacted by the final Project footprint), as shown on **Tables 4 through 6** and outlined in Condition of Certification **BIO-21**. The evidence indicates that implementation of Condition of Certification **BIO-21** would reduce impacts to State waters to less than significant levels from the proposed Project and Reconfigured Alternatives 2 and 3. (Ex. 301, pp. C.2-78 - C.2-80, C.2-150 – C.2-155.) Condition of Certification **BIO-29** provides for implementation of **BIO-21** (and other applicable Conditions of Certification as outlined below) in association with construction phasing. (Ex. 301, pp. C.2-6, C.2-151, C.2-154, C.2-155.)

Wildlife Connectivity

Impacts from the proposed Project and Reconfigured Alternatives 2 and 3 to the network of ephemeral drainages at the site would also adversely affect wildlife connectivity, and would impede the ability of wildlife to move through washes and under I-10 in the Project area. The evidence indicates that culverts and associated major washes are used by a variety of wildlife, including desert tortoise, and provide important crossing points for movements between mountain ranges and along the valley floor. Partial fencing of the box culvert under I-10 at the central wash, and complete fencing of the eastern culvert impedes some wildlife from using these culverts. Based on the importance of local drainages and culverts, associated impacts to vital movement corridor for the desert tortoise and other wildlife would be significant under the proposed Project and Reconfigured Alternatives 2 and 3 (with these impacts slightly greater under Reconfigured Alternatives 2 and 3 due to their proximity to I-10). With implementation of proposed Conditions of Certification, these potential impacts to wildlife connectivity would be reduced below a level of significance. Specifically,

item No. 1 under Condition of Certification **BIO-9** requires construction of desert tortoise exclusion fencing on both sides of I-10 to direct desert tortoise and other wildlife to safe passage under the freeway bridges. This measure includes individual fencing requirements for the proposed Project and Reconfigured Alternatives 2 and 3 (Ex. 301, pp. C.2-80, C.2-81, C.2-151 – C.2-152, C.2-155.)

Sand Transport Corridors/Sand Dunes

As described under Item 2, Existing Biological Resources, the proposed Project boundary covers approximately 50 percent of the width of the Palen Dry Lake-Chuckwalla sand transport corridor, including portions of Zones II through IV. Based on the modification of associated site boundaries, Reconfigured Alternatives 2 and 3 would substantially reduce intrusion into the sand transport corridor, including the more sensitive Zone II areas as outlined below.

The described intrusion into the Palen Dry Lake-Chuckwalla sand transport corridor by the proposed Project would result in approximately 1,781 acres of direct impacts, and 1,113 acres of indirect sand shadow impacts. A sand shadow is defined as an area downwind of a sand barrier where the wind is able to remove sand, but there is no supply of new sand from upwind sources due to the presence of the barrier. The evidence shows that Zone II also has the greatest abundance of MFTL in the Project area, and the majority (970 acres) of the indirect impacts from the proposed Project would occur in Zone II. The proposed Project may also indirectly impact sand transport by eliminating the network of desert washes throughout the site and replacing them with engineered channels (with part of the sediment-delivery system that contributes to active sand dunes fed episodically by ephemeral streams). The direct and indirect impacts of the Project on sand dunes and the processes that support them could also potentially impact other species, including Harwood's woolly-star, Harwood's milk-vetch and sand dune-dependent insect species. The described impacts of the proposed Project to the sand transport corridor, as well as to the MFTL and other sand dune dependent species, would be significant and unmitigable. These impacts would be reduced somewhat with implementation of proposed Condition of Certification **BIO-20** (Sand Dune Community/MFTL Mitigation), and **BIO-29**, although they would remain significant after mitigation.

Reconfigured Alternatives 2 and 3 would shift the Project footprint further out of the sand transport corridor, avoiding most impacts in Zone II and substantially reducing interference with sand transport and associated downwind impacts to sand dune habitats and dependent species. In addition, the remaining downwind

impacts would occur primarily in less sensitive habitats. (Ex. 301; pp. C.2-151, C.2-154, and Ex. 313,) Specifically, Reconfigured Alternative 2 would result in approximately 1,503 acres of direct impacts and 144 acres of indirect impacts, while Reconfigured Alternative 3 would result in approximately 1,542 acres of direct impacts and 94 acres of indirect impacts. While the described impacts to sand dune habitat from Reconfigured Alternatives 2 and 3 would still be considered significant, they would be mitigated to less than significant levels through Condition of Certification **BIO-20**. (Ex. 301, pp. C.2-81 - C.2-83, C.2-152, C.2-155.)

Applicant requested that we delay the implementation of **BIO-20**, to give the project owner time to design and install fencing intended to allow the free movement of sand. We would then allow the project owner to monitor the project's effect on sand transport. The requirement to provide compensation lands would be implemented only if the monitoring showed that there was a project-induced impact to sand transport despite the specially-designed fencing. Staff's witness Andrew Collison testified convincingly that because sand transport varies tremendously due to climatic conditions and terrain characteristics, it would be impossible to develop a reliable monitoring scheme. Furthermore, he was not aware of any sort of fence design that would not impede sand transport. (10/27 RT 47:15 – 70:2.) Applicant provided neither evidence of a fence design that would not impede sand transport, nor details of a monitoring scheme that could reliably predict project impacts on sand transport. CEQA requires that mitigation measures we impose have a reasonable degree of specificity and detail; without evidence of a scientifically acceptable monitoring scheme and a proven fence design we would be unable to meet that requirement. Accordingly, we agree with Staff and find that acquisition of compensation lands pursuant to condition of certification **BIO-20** is appropriate mitigation, which reduces impacts below the level of significance.

Groundwater-dependent Vegetation

The evidence indicates that groundwater levels near the proposed Project water supply wells would decline between approximately 0.1 and 5 feet within an approximate 2-mile radius of each well during Project-related pumping. (Ex. 301, p. C.2-83.) These impacts would be reduced somewhat under Reconfigured Alternatives 2 and 3, due to the fact that associated wells are located further from GDEs, as outlined below.

The present-day shoreline of Palen Dry Lake is located approximately 2 miles from the nearest proposed Project well, with the intervening area supporting habitats associated with shallow groundwater including alkali sink scrub and scattered stands of honey mesquite. Accordingly, proposed Project-related groundwater pumping could potentially result in drawdown of the shallow aquifer and lowering of the groundwater table below the effective rooting level for some species, particularly the shallower-rooted sink scrubs. The GDEs and other habitats potentially at risk are documented as rare natural communities, and support a wide variety of special-status plant and animal species. (Ex. 301, p. C.2-87.)

Declining water tables may also reduce the amounts of salts and water wicked to the surface by capillary action, potentially altering the chemistry of surface soils around the margins of Palen Dry Lake. If the surface salinity decreases, it could render the habitat unsuitable for the halophytes (salt-adapted plants) that make up these ecosystems, which include several rare or special-status plants.

Proposed Project groundwater pumping could also potentially cause some loss of habitat function or value for drought-tolerant, upland species that occur in close proximity to a pumping well. Creosote bush, for example, is not characteristically dependent on groundwater, but could potentially be affected if a significant drawdown were to occur quickly and in an area where this shallow-rooted species is accustomed to the regular availability of soil moisture.

As described in the **Soil and Water Resources** section of this Decision, surface waters such as springs in the Project vicinity are not expected to be affected by proposed groundwater pumping, based on the distance of the Project from these features, as well as the associated hydrogeologic conditions and physiographic setting. (Ex. 301, pp. C.2-88, C.2-89.)

Due to the described uncertainties associated with local groundwater tables and their relationships to biological resources, indirect impacts to GDEs from proposed Project-related groundwater pumping are considered potentially significant. These potential impacts would be reduced under Reconfigured Alternatives 2 and 3, as the associated wells would be located approximately 3,000 feet south of the originally proposed Project wells (Ex. 301; pp. C.2-151, C.2-154.) While these impacts and related effects to GDEs would still be potentially significant under Reconfigured Alternatives 2 and 3 (as well as the proposed Project), they would be mitigated to less than significant levels through implementation of Conditions of Certification **BIO-23 and BIO-24**. (Ex. 301, pp.

C.2-83 - C.2-91, C.2-150 – C.2-155.) Specifically, Condition of Certification **BIO-23** provides specifications and performance standards for the development of a detailed, peer-reviewed Vegetation Monitoring Plan for the life of the Project. Condition of Certification **BIO-24** requires the Project owner to take remedial action if the monitoring described in **BIO-23** detects declining spring season and post-monsoon water tables in the alluvial aquifer (in any amount greater than the baseline seasonal variability), in combination with a decline in plant vigor of greater than 20 percent when compared to the same plots pre-disturbance.

Special-status and Sensitive Wildlife Species

Desert Tortoise

- *Direct Impacts*

Potential direct impacts to the desert tortoise from the proposed Project include: (1) the permanent loss of 3,738 acres of low to moderate quality occupied habitat, including 201 acres of designated critical habitat within the Chuckwalla Desert Tortoise Critical Habitat Unit (CHU); (2) fragmentation/disturbance of adjacent habitat; (3) disruption of connectivity corridors between CHUs located north and south of I-10; (4) mortality from tortoises moving around the Project site and being directed towards I-10 (rather than following existing washes extending beneath the freeway corridor); (5) mortality to individuals during Project clearing, grading and trenching, as well as from vehicle/equipment use/access; (6) illegal collection or vandalism; (7) disruption of behavior during construction and operation of facilities; (8) disturbance by noise or vibration; (9) encounters with worker's or visitor's pets; and (10) effects from relocation/translocation efforts, such as injury or death from improper capture or handling techniques, as well as inherent risks and uncertainties in moving desert tortoises. (Ex. 301, pp. C.2-91 - C.2-95.)

Reconfigured Alternatives 2 and 3 would result in generally similar impacts to the desert tortoise, with the following exceptions: (1) Reconfigured Alternative 2 would result in the permanent loss of 4,205 acres of low to moderate quality occupied habitat, including 228 acres of designated critical habitat within the Chuckwalla Desert Tortoise CHU; (2) Reconfigured Alternative 3 would result in the permanent loss of 4,137 acres of low to moderate quality occupied habitat, including 228 acres of designated critical habitat within the Chuckwalla Desert Tortoise CHU; and (3) both alternatives would result in slightly greater impacts to connectivity corridors north and south of I-10, as previously described.

A number of measures have been identified to address potential direct impacts to the desert tortoise, with these measures applicable to the proposed Project and Reconfigured Alternatives 2 and 3. Specifically, these include Conditions of Certification **BIO-1** through **BIO-12** and **BIO-29**. Proposed Conditions of Certification **BIO-1** through **BIO-8** are general measures that would benefit all biological resources, including the desert tortoise and associated habitat areas. Specifically, Conditions of Certification **BIO-1** through **BIO-5** require qualified biologists, with authority to implement mitigation measures necessary to prevent impacts to biological resources, to be on site during all construction activities. Condition of Certification **BIO-6** requires the development and implementation of a Worker Environmental Awareness Program to train all workers to avoid impacts to sensitive species and their habitats. Condition of Certification **BIO-7** requires the Project owner to prepare and implement a Biological Resources Mitigation Implementation and Monitoring Plan that incorporates the mitigation and compliance measures required by local, state, and federal LORS regarding biological resources, Condition of Certification **BIO-8** describes Best Management Practices requirements and other impact avoidance and minimization measures, including the installation of a box culvert suitable for passage of desert tortoises (and other wildlife) under Project access roads.

Conditions of Certification **BIO-9** through **BIO-12** are specific to the desert tortoise, with **BIO-9** involving the installation of security and desert tortoise exclusionary fencing around the entire Project Disturbance Area (including access roads), and along I-10 south of the Project site (with specific fencing requirements identified for the proposed Project and Reconfigured Alternatives 2 and 3). **BIO-10** involves the development and implementation of a desert tortoise relocation/translocation plan to move tortoises currently within the Project Disturbance Area to identified relocation or translocation sites. **BIO-11** requires verification that all desert tortoise impact avoidance, minimization, and compensation measures have been implemented. **BIO-12** requires the acquisition and preservation of an appropriate acreage of desert tortoise habitat within the Colorado Desert Recovery Unit. Specifically, this would include a 5:1 replacement ratio for impacts to critical habitat in the Chuckwalla Desert Tortoise CHU, as well as a 1:1 replacement ratio for impacts to other tortoise habitat.

In addition to the above measures, Condition of Certification **BIO-28** provides a potential option to satisfy the requirements of Condition of Certification **BIO-12**, through provision of appropriate funding to an approved in-lieu fee program rather than direct property acquisition by the Project owner.

- *Indirect Impacts*

Potential indirect impacts to the desert tortoise from the proposed Project and Reconfigured Alternatives 2 and 3 include: (1) increased predation from ravens, coyotes, feral/pet dogs and/or other predators; (2) increased mortality from operational vehicle traffic; (3) impacts from the spread of noxious weeds; (4) disruptions to connectivity as noted above under direct impacts; and (5) increased potential for accidental wildfires and construction-related erosion/sedimentation. Specifically, Project construction and operation activities could attract tortoise predators due to the presence of water and food sources such as trash and road kill. Additionally, the presence of worker or visitor pets could result in tortoise injury or mortality, particularly if allowed off-leash. The increase of traffic on local roadways from Project-related activities would generate the potential for associated tortoise injury or mortality. The Project-related spread of noxious weeds could reduce the quality of tortoise habitat (e.g., by replacing native plants that provide tortoise forage), increase the danger of wildfires, restrict tortoise movements, and/or produce toxic effects to tortoises if consumed. Construction-related erosion/sedimentation could affect downstream tortoise burrows during heavy rain events, while accidental wildfires could result during both Project construction (e.g., from vehicle/equipment sparks) and operation (e.g., from downed transmission lines). These potential impacts would be addressed for the proposed Project and Reconfigured Alternatives 2 and 3 through the previously noted Conditions of Certification **BIO-6** and **BIO-8**, as well as **BIO-13**, **BIO-14** and **BIO-29**. Specifically, **BIO-13** requires the implementation of a Raven Monitoring and Control Plan in conformance with applicable federal guidelines and payment of associated applicable fees, while **BIO-14** entails implementing an approved Weed Management Plan.

Intervenor Center for Biological Diversity (CBD) offered testimony and evidence critical of Staff's analysis and recommended mitigation measures for impacts to DT. CBD stated that translocation of DT has proven ineffective and resulted in high mortality rates, citing as an example the recent experience at Ft. Irwin in California (Ex. 600, testimony of Ilene Anderson, p. 5.) However, CBD included in its evidence a study by Esque, et al. which concluded that predation on DT in the Ft. Irwin area appeared to be related more to drought conditions than to translocation. (Ex. 651). Applicant offered evidence that, done properly, translocation can be an effective mitigation measure (Ex. 58.) Staff, responding to CBD's expressed concerns, pointed out that all recommended DT mitigation measures, including translocation if necessary, would be conducted pursuant to BLM, USFWS and CDFG guidance. Moreover, the parties are in agreement that

evidence of DT actually occupying the project site is low. The evidence convinces us that it is likely that few, if any, DT will be detected during clearance surveys, and that translocation is therefore not likely to occur. (Ex. 303, pp. 3 – 4.)

CBD also expressed concern over the genetic differences between tortoises in the Eastern and Northern Colorado Recovery Units, stating that the proposal for acquisition of DT mitigation lands overlooked the Eastern Unit, requiring only that mitigation lands be in the Northern Unit. (Ex. 600, testimony of Ilene Anderson, p. 5.) Staff's evidence, however, showed that the USFWS reviewed and approved use of the 2008 draft Desert Tortoise Recovery Plan (Ex. 301, pp. C.2-44 – C.2-45.) This plan combines the two Colorado Desert Recovery Units on the basis of recent genetic information showing that it would be beneficial to DT recovery based on an evaluation of recent data by the Desert Tortoise Recovery Office (DTRO). (Ex. 303, pp. 5 – 7.) **BIO-12** requires that lands within the Chuckwalla DWMA have first priority for acquisition as mitigation lands.

The evidence shows that implementation of the listed Conditions of Certification would reduce all identified direct and indirect Project impacts to the desert tortoise to less than significant levels. (Ex. 301, pp. C.2-91 - C.2-105, C.2-150 – C.2-155.)

<u>Mojave Fringe-toed Lizard</u>

As described above under Sand Transport Corridors/Sand Dunes, the proposed Project would result in substantial encroachment into the Palen Dry Lake-Chuckwalla sand transport corridor (including portions of Zones II through IV), which is a critical component in the creation/preservation of MFTL habitat. Based on the modification of associated site boundaries, Reconfigured Alternatives 2 and 3 would substantially reduce intrusion into the sand transport corridor (including the more sensitive Zone II), and would correspondingly reduce impacts to the MFTL as outlined below.

The proposed Project would directly impact 1,781 acres of MFTL habitat in the northeastern portion of the associated disturbance area, and would result in indirect impacts to 1,113 acres of off-site MFTL habitat through the previously described interruption of a regional sand transport corridor and creation of a sand shadow (The MFTL relies on vegetated sand dunes and a regular supply of fine wind-blown sand for its habitat. Other potential indirect impacts to the MFTL from the proposed Project include: (1) eliminating the network of desert washes

throughout the site and replacing them with engineered channels (2) mortality from construction vehicle strikes; (3) introduction and spread of non-native invasive plants (including Sahara mustard which tends to increase sand compaction and degrading active dune communities); (4) erosion and sedimentation of disturbed soils; (5) edge effects including fragmentation and degradation of remaining habitat; (6) increased road kill hazard from operations traffic; (7) harm from accidental spraying or drift of herbicides and dust suppression chemicals; and (8) an increase in access for avian predators (such as loggerhead shrikes) due to new perching structures.

Both the direct loss of on-site habitat through Project construction, and the indirect degradation of off-site (downwind) habitat through creation of a sand shadow (and other indirect effects) are considered significant impacts of the proposed Project to the MFTL. These impacts would be reduced somewhat through previously described Conditions of Certification **BIO-20** and **BIO-29**, although they would remain significant. (Ex. 301, pp. C.2-105 - C.2-108.)

Reconfigured Alternatives 2 and 3 would shift the Project footprint further out of the sand transport corridor, substantially lessen interference with sand transport, and reduce associated impacts to sand dune dependent species including the MFTL. Other potential indirect impacts to the MFTL from Reconfigured Alternatives 2 and 3 would be similar to those noted above for the proposed Project.

Intervenor CBD suggested that the entire habitat for MFTL should be mitigated at a 3:1 ratio. (Ex. 600, testimony of Ilene Anderson, p. 6.) However, the evidence shows that stabilized and partially stabilized sand dunes, some wash habitat, and other areas within Sonoran creosote scrub bush habitat with appropriate soils provide habitat for MFTL. (Exs. 301, pp. C.2-46, 148; 303, pp.7 – 8; 313.) The 3:1 mitigation ratio for dune habitat is based on guidance in the NECO plan, and was also independently determined by Staff to be scientifically sound. For other MFTL habitat, such as sand fields vegetated with sparse creosote bush scrub, the mitigation ratio would be 1:1, with the requirement that acquired mitigation lands be within the Chuckwalla or Palen sand transport corridor. Indirect impacts due to sand transport interference would be mitigated at a 0.5:1 ratio, because this impact would not be irreversible as it would not be on the plant site where all natural habitat would be graded. (Ex. 303, p. 8; 10/27/10 RT 86:2 – 23.)

The evidence strongly supports our finding that while the described impacts to the MFTL from Reconfigured Alternatives 2 and 3 would still be considered

significant, they would be mitigated to less than significant levels through Condition of Certification **BIO-20**. (Ex. 301, pp. C.2-81 - C.2-83, C.2-152, C.2-155.)

Western Burrowing Owl

A high amount of burrowing owl sign occurs within the Project site disturbance areas, and the evidence indicates that at least four owls (2 adults and 2 juvenile/fledglings) occupy the proposed Project site and would be impacted by development under the proposed Project or Reconfigured Alternatives 2 and 3. Potential Project-related direct impacts to burrowing owls include loss of nest sites, eggs, and/or young; the permanent loss of breeding and foraging habitat; and disturbance of nesting and foraging activities for burrowing owl pairs within the site or surrounding areas. Indirect impacts to burrowing owls during construction and operation can include increased road kill hazards, modifications to foraging and breeding activities, and loss of prey items and food sources due to a decreased number of fossorial (burrowing or digging) mammals. These impacts would be the same for the proposed Project and Reconfigured Alternatives 2 and 3, and would be addressed through Conditions of Certification **BIO-18** and **BIO-29**. Specifically, **BIO-18** requires the Applicant to prepare and implement a Burrowing Owl Mitigation Plan that would include a description of suitable burrowing owl relocation/translocation sites, provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl, provide detailed methods and guidance for passive relocation of burrowing owls, and describe proposed maintenance monitoring, reporting, and management of the relocated burrowing owls. **BIO-18** also requires acquisition and enhancement of a minimum of 78 acres of off-site suitable nesting and foraging burrowing owl habitat to mitigate for displacement of at least four owls. CBD's argument that the amount of mitigation land required by these measures is insufficient and that 4000 acres may be required to support 4 owls apparently ignores the evidence that the 5000 acres of DT habitat which will be acquired would provide substantial benefit to the burrowing owl because the habitat requirements of the two species have a good deal in common. (Exs. 303, pp. 9 – 10; 600, testimony of Ilene Anderson, pp. 7 – 8.) The evidence indicates that implementation of the noted measures would reduce Project impacts to burrowing owls from the proposed Project and Reconfigured Alternatives 2 and 3 to less than significant levels. (Ex. 301, pp. C.2-108 to C.2-110, C.2-151, C.2-154.)

Golden Eagle

Potential Project-related impacts to golden eagles would be the same for the proposed Project and Reconfigured Alternatives 2 and 3. Specifically, these potential impacts would be associated with the loss of foraging habitat, as well as construction activities that could potentially injure or disturb golden eagles if nests were established sufficiently close to Project boundaries to be affected by the sights and sounds of construction. While potential construction impacts are considered unlikely because suitable nesting areas (i.e., cliff ledges, rocky outcrops, or large trees) do not occur within one mile of the Project site, such effects could occur if active golden eagle nests were established within one mile of the Project boundaries (e.g., on transmission line towers). The identified potential impacts to golden eagles would be addressed through implementation of the previously described Conditions of Certification **BIO-12**, **BIO-14**, and **BIO-21**, as well as **BIO-25** and **BIO-29**. Specifically, **BIO-25** requires that, during construction, golden eagle nest surveys be conducted in accordance with applicable guidelines to verify the status of golden eagle nesting territories within one mile of the Project boundaries. If active nests are detected, **BIO-25** provides monitoring guidelines, performance standards, and adaptive management measures to avoid adverse impacts to golden eagles from Project construction. The evidence indicates that implementation of the noted measures would reduce potential impacts of Project construction on nesting golden eagles to less than significant levels for the proposed Project and Reconfigured Alternatives 2 and 3. (Ex. 301, pp. C.2-110, C.2-111, C.2-151, C.2-154.)

Migratory/Special-status Bird Species

Project-related impacts to avian species would be the same for the proposed Project and Reconfigured Alternatives 2 and 3. Specifically, these potential impacts would include adverse effects to resident breeding birds at the site, including (among other species) loggerhead shrike, California horned lark, and Le Conte's thrasher. These species would be directly affected by the loss of desert dry wash woodland, unvegetated ephemeral dry wash, and Sonoran creosote bush scrub (refer to **Tables 4 through 6** for associated impact acreages from the proposed Project and Reconfigured Alternatives 2 and 3). Additional potential direct effects would include the loss of cover, foraging and nesting and opportunities provided by native habitats, especially desert dry wash woodland. The proposed Project site does not provide breeding habitat for Swainson’s hawks, northern harriers, peregrine falcons, or yellow warblers, although these species could be present locally during migration or in the winter.

Project impacts to Sonoran creosote bush scrub and desert dry wash woodland would contribute to the loss of foraging habitat, cover, and roost sites for these species on their migratory or wintering grounds, but would not contribute to loss of breeding habitat.

Several Conditions of Certification would address identified potential direct and indirect impacts to migratory/special-status bird species for the proposed Project and Reconfigured Alternatives 2 and 3, including: (1) the previously described **BIO-8**, as well as **BIO-15**, which requires appropriate pre-construction nest surveys, **BIO-16**, which requires the implementation of an approved Avian Protection Plan, and **BIO-29**. Implementation of the noted measures would reduce potential direct and indirect impacts to migratory/special-status bird species from the proposed Project and Reconfigured Alternatives 2 and 3 to less than significant levels. (Ex. 301, pp. C.2-111, C.2-112, C.2-150 – C.2-155.)

<u>American Badger and Desert Kit Fox</u>

Potential impacts to the American badger and desert kit fox from the proposed Project and Reconfigured Alternatives 2 and 3 would include the loss of foraging and denning habitat, fragmentation and degradation of adjacent habitat, crushing or entombing of animals in dens, and disturbance/harassment of individuals (refer to **Tables 4 through 6** for associated impact acreages from the proposed Project and Reconfigured Alternatives 2 and 3). The previously identified impacts to the American badger and kit fox would be offset by implementation of the previously described Condition of Certification **BIO-12**, as well as through proposed Condition of Certification **BIO-17**, which requires that a qualified biologist conduct pre-construction surveys for badger and kit fox dens concurrent with desert tortoise surveys (including areas within 250 feet of all Project facilities, utility corridors, and access roads). The evidence indicates that implementation of the noted measure would reduce potential direct and indirect impacts to American badgers and desert kit foxes from the proposed Project and Reconfigured Alternatives 2 and 3 to less than significant levels. (Ex. 301, pp. C.2-113, C.2-150 – C.2-155.)

Construction Noise

Construction activities associated with the proposed Project or Reconfigured Alternatives 2 and 3 would result in a temporary, although relatively long-term (39 months) increase in the ambient noise level. Excessive construction noise could interfere with normal wildlife communication, potentially affecting contact

between mated birds, warning and distress calls that signify predators and other threats, and feeding behavior and protection of young. High noise levels may also render an otherwise suitable nesting area unsuitable or result in abandonment of active nesting sites.

While the evidence indicates that average construction noise levels would usually attenuate to 60 dBA or less at the Project boundary, elevated noise from steam blows and pile driving could adversely affect the breeding, roosting, or foraging activities of sensitive wildlife near the Project area. Condition of Certification **BIO-8** would be required to minimize these potential noise impacts. Specifically, this measure includes a requirement to avoid loud construction activities (i.e., steam blowing and pile driving) that would result in noise levels over 65 dBA at potential wildlife breeding sites (such as dry desert wash woodland) between February 15 and April 15 (the height of the bird breeding season). With implementation of this measure, noise-related impacts from construction activities associated with the proposed Project or Reconfigured Alternatives 2 and 3 would be less than significant. Employing the low-pressure steam blow technique recommended by staff would further reduce noise levels and hence the potential for impacts to wildlife (refer to the **NOISE** section of this Decision for additional information). (Ex. 301, pp. C.2-114, C.2-115, C.2-150 – C.2-155.)

Additional Operational Impacts

Lighting and Nocturnal Collisions

Lighting plays a substantial role in collision risk because lights can attract nocturnal migrant songbirds, and major bird kill events have been reported at lighted communications towers (with most kills from towers higher than 300 to 500 feet). (Ex. 301, p. C.2-115.) Operation of the Project under the proposed Project or Reconfigured Alternatives 2 and 3 would require onsite nighttime lighting for safety and security, and would attract bats and disturb wildlife activities in the Project site vicinity (e.g., nesting birds, foraging mammals, and flying insects). To reduce related impacts, lighting at the facility would be restricted to areas required for safety, security, and operation. Exterior lights would also be hooded, lights would be directed on site to minimize light or glare, and 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, allowing these areas to remain un-illuminated most of the time. While the evidence indicates that that potential impacts from bird collisions with structures would be less than significant for the

proposed Project or Reconfigured Alternatives 2 and 3 (as the tallest Project structure would be 120 feet), a number of measures are recommended to minimize the risk of collision and disturbance to wildlife from lights. Specifically, these include Conditions of Certification **VIS-3** (Temporary and Permanent Exterior Lighting) and the previously described **BIO-8,** which includes specifications that lighting atop the towers is shielded downward and turned off when not needed. Based on the described conditions and implementation of the noted measures, potential impacts related to lighting and nocturnal collisions would be less than significant for the proposed Project or Reconfigured Alternatives 2 and 3. (Exs. 301, pp. C.2-115, C.2-116, C.2-150 – C.2-155; 303, pp. 16 - 17.)

Electrocution

Large raptors such as golden eagle, red-tailed hawk, and great-horned owl can be electrocuted by transmission lines when their wings simultaneously contact two conductors of different phases, or a conductor and a ground. In addition, distribution lines that are less than 69-kV but greater than 1-kV pose an electrocution hazard for raptor species attempting to perch on the structure. To minimize electrocution risks from the proposed Project and Reconfigured Alternatives 2 and 3, Condition of Certification **BIO-8** has been identified. Specifically, this measure requires a "raptor-friendly" construction design for Project transmission lines, including use of conductor wire spacing greater than the wingspans of large birds to help prevent electrocution (pursuant to industry standards). Implementation of this measure would reduce potential impacts related to large bird electrocution from the proposed Project or Reconfigured Alternatives 2 and 3 below a level of significance. (Ex. 301, pp. C.2-115 - C.2-117, C.2-150 – C.2-155.)

Lighting – Glare

Glint and glare studies of solar trough technology have determined that pedestrians standing within 20 meters (60 feet) of the perimeter fence when the mirrors rotate from the stowed position to a vertical position may see a light intensity equal or greater to levels considered safe for the human retina. Accordingly, the evidence indicates that wildlife on the ground at a distance of 20 meters or closer could experience similar hazards from unsafe light intensity. Condition of Certification **VIS-4**, which requires that slatted fencing be used as the perimeter fencing primarily to mitigate for impacts to motorists, would also prevent glare exposure to wildlife on the ground within 20 meters of the Project boundary (refer to the **Visual Resources** section of this Decision for additional

information). Accordingly, implementation of this measure would reduce potential glare impacts to wildlife from the proposed Project or Reconfigured Alternatives 2 and 3 below a level of significance. (Ex. 301, pp. C.2-117, C.2-150 – C.2-155.)

Collisions

Bird collisions with structures typically result when the structures are invisible (e.g., bare power lines or guy wires at night), deceptive (e.g., glazing and reflective glare), or confusing (e.g., light refraction or reflection from mist). Collision rates generally increase in low light conditions, during inclement weather (e.g., fog, which is rare in the desert), during strong winds, and during panic flushes when birds are startled by a disturbance, fleeing from danger, or diving after prey. While the evidence indicates that the likely risk of such impacts from the proposed Project or Reconfigured Alternatives 2 and 3 is low, uncertainties exist due to the lack of associated research-based data Accordingly, Condition of Certification **BIO-16** has been identified to address these potential impacts. Specifically, this measure includes a requirement to determine if operation of the Project poses a collision risk for birds, and to provide adaptive management measures to mitigate those impacts to less-than-significant levels if applicable. (Ex. 301, pp. C.2-117, C.2-118, C.2-150 – C.2-155.)

Evaporation Ponds

The proposed Project and Reconfigured Alternatives 2 and 3 include two double-lined 4-acre evaporation ponds to receive industrial waste streams that would primarily come from the Project's auxiliary cooling tower and boiler. The proposed evaporation ponds would encompass contaminants including TDS or selenium, and could pose several threats to wildlife from creation of a new water source that would: (1) attract ravens to the Project site, potentially increasing predation rates on juvenile desert tortoise in adjacent habitat; (2) attract waterfowl, shorebirds, and other resident or migratory birds that could attempt to drink or forage at the ponds; and (3) attract Couch's spadefoot toads that could attempt to breed in the ponds. Accordingly, Condition of Certification **BIO-26** has been identified to address these potential concerns. Specifically, this measure requires installation of netting over the evaporation ponds to exclude birds and other wildlife, as well as a monitoring program to ensure the effectiveness of exclusion. Implementation of this measure would reduce evaporation pond impacts to birds and other wildlife from the proposed Project or Reconfigured

Alternatives 2 and 3 below a level of significance. (Ex. 301, pp. C.2-119, C.2-150 – C.2-155.)

Special-status Plant Species

Based on spring 2009 and 2010 surveys, the evidence indicates that construction of the proposed Project or Reconfigured Alternatives 2 and 3 would potentially result in significant direct and/or indirect impacts to the following five special-status plant species, Harwood's wooly-star (also sometimes referred to as Harwood's phlox or Harwood's eriastrum), Harwood's milk-vetch, ribbed cryptantha, California ditaxis and "Palen Lake saltbush", a potentially new taxon observed near Palen Dry Lake (refer to **Table 3** for scientific nomenclature and listing status). (Ex. 301, pp. C.2-120, C.2-151, C.2-154.) Direct impacts would consist of the permanent loss of individual plants during Project construction and operation, while indirect impacts would be associated with effects such as drainage alteration/erosion, habitat fragmentation, spread of noxious weeds, herbicide drift and dust. The evidence further concludes that potential impacts to one additional special-status plant species observed during Project surveys, Utah vining milkweed, would be less than significant. (Ex. 301, p. C.2-129.)

Staff has also determined that potentially significant impacts could occur to special-status plants that could not have been or were not detected during the spring 2009 and 2010 surveys (i.e., late-season plants). Late-season plants regarded as having a moderate to high potential for occurrence in the Project site disturbance areas include Abram's spurge, flat-seeded spurge and lobed ground cherry. Accordingly, these late-season special-status plants could potentially be encountered during summer-fall surveys.

Several additional late-season species were identified with potential to occur, although their bloom seasons overlap the spring survey window and/or they don't require fruit or flowers for identification (and they therefore could have been detected during a spring survey, if present). Despite this condition, summer-fall surveys could potentially encounter additional special-status species, including glandular ditaxis (with California ditaxis also in this category, although this species was detected during spring surveys as noted above). The evidence also suggests that, based on the under-surveyed and poorly-understood nature of the region, as well as the previously described unique climatic conditions, additional special-status species could potentially occur. (Ex. 301, p. C.2-130.)

The identified potential direct and indirect impacts to special-status plant species from the proposed Project or Reconfigured Alternatives 2 and 3 would be addressed through proposed Conditions of Certification, including the previously described **BIO-8**, **BIO-14**, and **BIO-20** through **BIO-24,** as well as **BIO-19** and **BIO-29**. Specifically, **BIO-19** includes requirements for: (1) impact avoidance and compensatory mitigation relative to special-status plants; and (2) late-season surveys in summer-fall 2010 to ensure that any plants missed during the spring surveys would be detected and associated potential impacts identified/mitigated. The Applicant's botanists conducted complete late-season botanical surveys in the Project area on October 11, 2010 through October 15, 2010. Summer/fall annual plant species were detected in bloom and/or fruit within and in the vicinity of the Project, confirming that late season surveys were being conducted at the appropriate time, but no special-status plant species were detected in the Project area during the October 2010 surveys (Ex. 64, p. 1) The evidence indicates that implementation of the noted measures would reduce potential direct and indirect impacts to special-status plant species from the proposed Project or Reconfigured Alternatives 2 and 3 to less than significant levels. (Exs. 301, pp. C.2-119 - C.2-138, C.2-152, C.2-155; 303, pp. 16 - 17.)

Cacti, Yucca and Native Trees

The 2009 and 2010 surveys also included an inventory of native cacti, succulents and trees that are not designated as special-status or rare species, but are regulated to prevent unlawful harvesting. Several species of non-listed cactus and native desert trees were observed within the Study Area, including teddybear cholla (*Opuntia bigelovii*), California barrel cactus (*Ferocactus cylindraceus* var. *cylindraceus*), cottontop cactus, common fishhook cactus (*Mammillaria tetrancistra*), silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), hedgehog cactus, (*Echinocereus engelmannii*), blue palo verde, ironwood, honey mesquite, smoketree, and ocotillo (*Fouquieria splendens* ssp. *splendens*). Potential impacts to these (and other applicable) non-listed plant species from the proposed Project or Reconfigured Alternatives 2 and 3 would be addressed through previously described Conditions of Certification **BIO-8**, **BIO-14** and **BIO-29.** The evidence indicates that implementation of the noted measures would reduce potential direct and indirect impacts to non-special-status cactus, succulent and tree species from the proposed Project or Reconfigured Alternatives 2 and 3 to less than significant levels. (Exs. 301, pp. C.2-140, C.2-141, C.2-152, C.2-155; 303, pp. 16-17.)

Project Closure and Decommissioning

Potential impacts to biological resources from Project closure and decommissioning would be the same for the proposed Project and Reconfigured Alternatives 2 and 3. Specifically, these impacts would involve residual disturbance of developed areas and altered hydrologic conditions (including the engineered drainage channels), as well as similar impacts from vehicle/equipment access and employees as noted for Project construction. While a Draft Conceptual Decommissioning Plan has been prepared by the Project Applicant, staff has determined that additional information will be required to meet applicable LORS (including 43 CFR 3809.550 et seq. and related BLM policies). Accordingly, Condition of Certification **BIO-22** is included to address potential concerns related to Project closure and decommissioning. Specifically, this condition requires the Applicant to prepare a Decommissioning and Reclamation Plan and cost estimate that meets all applicable LORS. The evidence indicates that implementation of the noted measure would reduce potential impacts related to Project closure and decommissioning from the proposed Project or Reconfigured Alternatives 2 and 3 to less than significant levels. (Ex. 301, pp. C.2-141, C.2-142, C.2-150 – C.2-155.)

4. Project-related Future Actions

If the proposed project or Reconfigured Alternatives 2 or 3 are approved and constructed, the previously described SCE Red Bluff Substation would be a reasonably foreseeable related project. This substation would provide interconnections between the proposed Project or Reconfigured Alternatives and other renewable projects in the Desert Center area, and allow the associated electricity to be carried by the Devers-Palo Verde No. 1 (DPV1) 500 kV transmission line. The SCE Red Bluff Substation project, if implemented, would be fully evaluated in a future EIS prepared by the BLM and an EIR prepared by the California Public Utilities Commission. There are two alternative Red Bluff Substation locations, the east and west locations. The Red Bluff Substation would be located on an approximately 90-acre parcel of land, and associated features would include an access road, transmission lines, modification of some existing DPV1 structures near the substation, an electric distribution line for substation light and power, telecommunication facilities, and drainage facilities. Surface storm water would be redirected around the substation, which would add an additional 20 to 30 acres of land disturbance. In addition, the site would be bounded on three sides by 8-foot tall berms. (Ex. 301, p. C.2-160.)

Environmental Setting

The proposed Red Bluff Substation would encompass Sonoran creosote bush scrub and desert dry wash woodland habitats, in an area that provides good quality habitat for desert tortoise (including designated critical habitat). **Table 3** provides a list of the special-status plant and wildlife species that could occur in and near the proposed substation site.

The proposed substation site would be located in the vicinity of several federal, state, and locally designated Special Habitat Management Areas, and would be within the Chuckwalla DWMA. This DWMA was designated as an ACEC through the NECO to protect desert tortoise and other significant natural resources including special-status plant and animal species and natural communities. Additionally, the substation site would be located in the Eastern Colorado Recovery Unit that was identified in the Desert Tortoise Recovery Plan. The Eastern Colorado Recovery Unit includes the Chuckwalla and Joshua Tree DWMAs, which are focused on desert tortoise recovery efforts.

Environmental Impacts and Mitigation

Construction of the proposed Red Bluff Substation would remove Sonoran creosote bush scrub and desert dry wash woodland habitats, and could lead to a number of related potential impacts including:

- Invasion of the newly disturbed areas by non-native invasive plant species.
- Increased levels of blowing dust that may settle on the vegetation surrounding the construction areas (and potentially decrease photosynthetic capabilities).

- Disturbance of nesting activities and wildlife movements, and potential take of listed and special-status species (including desert tortoise).

- Impact to sensitive habitats (including Waters of the U.S.) and associated management area designations, as well as related plant and wildlife species that are dependent on these areas.

Potential mitigation for the proposed Red Bluff Substation would likely include similar types of measures as identified for the proposed Project and Reconfigured Alternatives 2 and 3. Based on available information regarding the substation site and development, such measures are anticipated to include the following:

- Implementation of preconstruction surveys to identify, delineate and quantify sensitive habitats and listed/sensitive species.

- Removal of desert tortoises as appropriate.

- Identification of measures to avoid sensitive resources and breeding/nesting seasons, and limit associated impacts wherever/whenever feasible.

- Provision of biological monitors during construction, and environmental awareness training to all construction workers.

- Implementation of appropriate clean up, revegetation and erosion control efforts.

- Conformance with all applicable LORS, including limitations to cumulative impacts.

The proposed SCE Red Bluff Substation could potentially result in significant impacts to biological resources. These potential impacts would likely be addressed through similar measures as described for the proposed Project and Reconfigured Alternatives 2 and 3 (including conformance with all applicable LORS), although specific impacts and mitigation requirements cannot be identified until exact substation locations and facilities are known (with a site-specific environmental evaluation to be conducted at that time). Based on the noted conditions and assumptions, it is anticipated that potential impacts to biological resources from the planned substation project would be reduced below a level of significance. (Ex. 301, pp. C.2-160 - C.2-165.)

5. Alternatives

As previously described, two reconfigured alternatives, Reconfigured Alternative 2 and Reconfigured Alternative 3, were evaluated to address potential impacts to sand transport corridors and related species associated with the proposed Project. These alternatives, along with associated impacts to biological resources, are summarized below, with additional impact discussion provided under Items 3 (Direct/Indirect Impacts and Mitigation) and 6 (Cumulative Impacts).

Reconfigured Alternative 2

Reconfigured Alternative 2 would encompass a 500 MW solar energy facility similar to the proposed Project, although it would reconfigure solar unit 1 (the

eastern solar unit) into a triangular-shaped area trending southeast (Ex. 301, **Alternatives – Figure 1B**.). The location and configuration of unit 2 under this alternative would be the same as that identified for the proposed Project. The reconfigured unit 1 would encompass a 40-acre private parcel on which the Applicant has a purchase option, as well as two additional private parcels, totaling 200 acres, not currently controlled by the Applicant. All other portions of the Reconfigured Alternative 2 site are located on public lands managed by the BLM. While the function and size of facilities associated with unit 1 would be unchanged under this alternative, a number of structures/facilities would be relocated, including the power block, evaporation ponds and bioremediation area. In addition, several modifications to drainage facilities would occur under Reconfigured Alternative 2, including the addition or extension of drainage channels. All off-site access roads and transmission facilities under this alternative would be the same as described for the proposed Project. The overall disturbance area for Reconfigured Alternative 2 is approximately 4,366 acres, with this alternative analyzed because it would retain the proposed 500 MW capacity of the Project, while reducing impacts related to sand transport, sand dune habitats and the MFTL. (Ex. 301, pp: B.2-12 – B.2-14, and p. C.2-150.)

Setting and Existing Conditions

The proposed unit 1 under this alternative would be reconfigured to avoid use of the northeastern third of the proposed field, resulting in a triangular shaped field trending southeast. The Reconfigured Alternative 2 site contains similar habitats as the proposed Project site, including approximately 180 acres of unvegetated ephemeral dry washes and 208 acres of desert dry wash woodland (both waters of the State), as well as approximately 3,817 acres of Sonoran creosote bush scrub and 156 acres of stabilized and partially stabilized desert dunes (refer to **Table 2**). This alternative site supports similar species as the proposed Project, including desert tortoise, burrowing owl, MFTL, and Harwood's milk-vetch. The Reconfigured Alternative 2 site is predominantly within sand transport zones 3 and 4, with relatively minor intrusion into Zone 2. (Ex. 301, p. C.2-150, **Biological Resources Figure B**.)

Assessment of Impacts and Discussion of Mitigation

Reconfigured Alternative 2 would have similar impacts to most resources as the proposed Project, with some notable exceptions. Specifically, because this alternative is approximately 340 acres larger than the proposed Project, impacts to desert dry wash woodland, unvegetated ephemeral dry wash, and desert tortoise habitat would increase somewhat. Impacts to sand dunes, the sand transport

corridor and related species, however, would be substantially reduced based on the reconfigured site boundaries.

This alternative would affect the same three washes as the proposed Project, although direct impacts to desert dry wash woodland would be 60 acres (40 percent) greater. This alternative is also closer to I-10, and so affects more of the central Project area wash than the proposed Project. Accordingly, it would have a greater affect on wildlife dependent upon this habitat type. Indirect impacts to desert dry wash woodland and unvegetated ephemeral dry wash woodland would be lower, but only because indirect impacts identified for the proposed Project would be direct impacts under this alternative. The risk to GDEs would be reduced under this alternative, due to the fact that proposed wells would be approximately 3,000 feet south of those in the proposed Project site (with shallow groundwater and GDEs occurring between the northern site boundaries and Palen Dry Lake to the north).

Total direct and indirect impacts to dunes would be substantially less under Reconfigured Alternative 2 than for the proposed Project (refer to **Tables 4 through 6**). Specifically, Reconfigured Alternative 2 disrupts a smaller area of the sand transport corridor, and the majority of the disruption is within the less sensitive Zone 3. As a result, downwind impacts are greatly reduced under this alternative, and the remaining downwind impacts are in less sensitive habitat. While impacts associated with the sand transport corridor and related habitats are significant under Reconfigured Alternative 2, they would be reduced below a level of significance through the identified Conditions of Certification. (Ex. 301, pp. C.2-150, C.2-151.)

Reconfigured Alternative 2 would impact the same special-status wildlife species as the proposed Project, including desert tortoise and western burrowing owl. Impacts to MFTL, a species dependent on fine, wind-blown sand, are inextricably linked to impacts to dune and other sandy habitats. Therefore, the impacts described above also apply to this species. Specifically, direct impacts to MFTL under Reconfigured Alternative 2 would be 1,503 acres, which is somewhat less than under the Proposed Project (1,781 acres). Indirect impacts are substantially reduced, however, and would be approximately 144 acres, or 969 acres less than the proposed Project. Under this alternative, total impacts to MFTL habitat would be reduced by over 40 percent compared to the proposed Project, and are considered significant but mitigable (while these same impacts are significant and unmitigable for the proposed Project). (Ex. 301, p. C.2-151.) Compensatory mitigation for sand dunes and the MFTL (staff's proposed Condition of

Certification **BIO-20**) would be the same under this alternative as for the proposed Project, although acreage requirements would be adjusted to reflect impact differences. As noted, implementation of these proposed Conditions of Certification would reduce associated impacts below a level of significance for Reconfigured Alternative 2.

Because Reconfigured Alternative 2 would affect a larger overall area than the proposed Project, impacts to wildlife habitat, such as Sonoran creosote bush scrub, would be slightly higher as previously noted. In addition, this alternative would affect about 27 more acres of desert tortoise critical habitat, or slightly over 10 percent more than the proposed Project. Wildlife currently use the three project area washes as a movement corridor and this alternative is closer to I-10 than the proposed Project, which leaves less room for movement past the site. This increases the possibility that animals would cross I-10 headed to the south at grade, increasing the potential for vehicle-related mortality. A minimization and mitigation measure (in staff's proposed Condition of Certification **BIO-9**) to reduce impacts to desert tortoise connectivity would include desert tortoise fencing along both sides of I-10 for this alternative. Because this alternative is closer to I-10 as described, the desert tortoise fencing would extend slightly beyond what would be required for the proposed Project to reach the first passable undercrossing east of the site.

Reconfigured Alternative 2 shares many additional significant but mitigable impacts with the proposed Project. For these impacts, staff's proposed Conditions of Certification are identical to those identified for the proposed Project, except that the compensatory mitigation acreages vary depending on differences in impacts between these alternatives.

Because Reconfigured Alternative 2 was developed after the survey season for some biological resources had ended, some portions of the associated disturbance area were not surveyed. (Ex. 301 – **Biological Resources Figure C**.) Specifically, approximately 350 acres (8 percent) of the disturbance area for this alternative were not surveyed for desert tortoise or burrowing owl, and approximately 430 acres (10 percent) were not included in the State waters survey area. Botanical surveys covered the entire alternative, and fall surveys were published on October 26, 2010. (Ex. 64.) In consultation with the BLM, USFWS, and CDFG, staff concluded that the lack of surveys for these areas does not preclude analysis of significance and assessment of the effectiveness of mitigation for several reasons. The primary reason was an in-field assessment of this area's habitat type and habitat quality in relation to surveyed habitat, which

appeared to be consistent with the adjacent unsurveyed habitat. Additionally, these areas are at the southern end of the proposed disturbance areas, and include areas influenced and disturbed by the I-10 corridor. These areas are not expected to differ in abundance or value from the adjacent intensively surveyed areas, and with implementation of pre-construction surveys outlined in Conditions of Certification **BIO-10** and **BIO-18**, as well as other impact minimization and mitigation measures in the other Conditions of Certification, we conclude that impacts to biological resources will be fully mitigated. (Ex. 301, pp. C.2-151, C.2-152.)

Reconfigured Alternative 3

Reconfigured Alternative 3 would encompass a 500 MW solar energy facility similar to the proposed Project, but would include a reconfiguration of unit 1 generally similar to that described above for Reconfigured Alternative 2. (Ex. 301; **Alternatives – Figure 1C**.) Under this alternative, however, the inclusion of private land would be limited to the previously noted 40-acre parcel on which the Applicant has a purchase option. All other portions of the Reconfigured Alternative 3 site are located on public lands managed by the BLM. The location and configuration of unit 2 under this alternative would be the same as that identified for the proposed Project. While the function and size of facilities associated with unit 1 would be unchanged under Reconfigured Alternative 3, a number of structure/facility relocations would occur, similar to those described above for Reconfigured Alternative 2. Several drainage facility modifications would also occur under Reconfigured Alternative 3, including the extension or shortening of drainage channels. All off-site access roads and transmission facilities under this alternative would be the same as described for the proposed Project. The overall disturbance area for Reconfigured Alternative 3 is approximately 4,330 acres, with this alternative analyzed for similar reasons as noted above for Reconfigured Alternative 2. (Ex. 301, pp: B.2-14, B.2-15, and p. C.2-153.)

<u>Setting and Existing Conditions</u>

The proposed unit 1 under this alternative would be reconfigured to avoid use of the northeastern third of the proposed field, and would result in a triangular shaped field trending southeast similar to that described for Reconfigured Alternative 2. The Reconfigured Alternative 3 site contains similar habitats as described for both the proposed Project and Reconfigured Alternative 2, including approximately 168 acres of unvegetated ephemeral dry washes and 198 acres of

desert dry wash woodland (both waters of the State), as well as approximately 3,771 acres of Sonoran creosote bush scrub and 188 acres of stabilized and partially stabilized desert dunes (refer to **Table 2**). This alternative site supports similar species as the proposed Project, including desert tortoise, burrowing owl, MFTL, and Harwood's milk-vetch. The Reconfigured Alternative 3 site is predominantly within sand transport zones 3 and 4, with relatively minor intrusion into Zone 2. (Ex. 301, p. C.2-153, **Biological Resources Figure B**.)

Assessment of Impacts and Discussion of Mitigation

Reconfigured Alternative 3 would have similar impacts to most resources as the Proposed Project, with some notable exceptions. Specifically, because this alternative is approximately 300 acres larger than the proposed Project, impacts to desert dry wash woodland, unvegetated ephemeral dry wash, and desert tortoise habitat would increase somewhat. Impacts to sand dunes, the sand transport corridor and related species, however, would be substantially reduced based on the reconfigured site boundaries.

This alternative would affect the same three washes as the proposed Project and Reconfigured Alternative 2, although direct impacts to desert dry wash woodland would be 50 acres (35 percent) greater than for the proposed Project. This alternative is also closer to I-10, and so affects more of the central Project area wash than the proposed Project. Accordingly, it would have a greater impact on wildlife dependent upon this habitat type. Indirect impacts to desert dry wash woodland and unvegetated ephemeral dry wash woodland would be lower, but only because indirect impacts identified for the proposed Project would be direct impacts under this alternative. The risk to GDEs would be reduced under this alternative, due to the fact that the proposed wells would be approximately 3,000 feet south of those in the proposed Project site (with shallow groundwater and GDEs occurring between the northern site boundaries and Palen Dry Lake to the north).

Total direct and indirect impacts to dunes would be substantially less under Reconfigured Alternative 3 than the Proposed Project (refer to **Tables 4 through 6**). Specifically, Reconfigured Alternative 3 disrupts a smaller area of the sand transport corridor, and the majority of the disruption is within the less sensitive Zone 3. As a result, downwind impacts are greatly reduced under this alternative, and the remaining downwind impacts are in less sensitive habitat. While impacts associated with the sand transport corridor and related habitats are significant under Reconfigured Alternative 3, they would be reduced below a level of

significance through the identified Conditions of Certification. (Ex. 301, pp. C.2-150, C.2-154.)

Reconfigured Alternative 3 would impact the same special-status wildlife species as the proposed Project, including desert tortoise and western burrowing owl. Impacts to MFTL, a species dependent on fine, wind-blown sand, are inextricably linked to impacts to dune and other sandy habitats. Therefore, the impacts described above also apply to this species. Specifically, direct impacts to MFTL under Reconfigured Alternative 3 would be 1,542 acres, which is somewhat less than under the Proposed Project (1,781 acres). Indirect impacts are substantially reduced, however, and would be approximately 94 acres, or over 1,000 acres less than the proposed Project. Under this alternative, total impacts to MFTL habitat would be reduced by over 40 percent compared to the proposed Project, and are considered significant but mitigable (while these same impacts are significant and unmitigable for the proposed Project). (Ex. 301, p. C.2-154.) Compensatory mitigation for sand dunes and the MFTL (staff's proposed Condition of Certification **BIO-20**) would be the same under this alternative as for the proposed Project, although acreage requirements would be adjusted to reflect impact differences. As noted, implementation of these proposed Conditions of Certification would reduce associated impacts below a level of significance for Reconfigured Alternative 3.

Because Reconfigured Alternative 3 would affect a larger overall area than the proposed Project, impacts to wildlife habitat, such as Sonoran creosote bush scrub, would be slightly higher as previously noted. In addition, this alternative would affect about 27 more acres of desert tortoise critical habitat, or slightly over 10 percent more than the proposed Project. Wildlife currently use the three project area washes as a movement corridor and this alternative is closer to I-10 than the proposed project, which leaves less room for movement past the site. This increases the possibility that animals would cross I-10 headed to the south at grade, increasing the potential for vehicle-related mortality. A minimization and mitigation measure in Condition of Certification **BIO-9** to reduce impacts to desert tortoise connectivity would include desert tortoise fencing along both sides of I-10 for this alternative. Because this alternative is closer to I-10 as described, the desert tortoise fencing would extend slightly beyond what would be required for the Proposed Project to reach the first passable undercrossing east of the site.

Reconfigured Alternative 3 shares many additional significant but mitigable impacts with the proposed Project. For these impacts, the Conditions of Certification we adopt are identical to those identified for the proposed Project,

except that the compensatory mitigation acreages vary depending on differences in impacts between these alternatives.

Because Reconfigured Alternative 3 was developed after the survey season for some biological resources had ended, some portions of the associated disturbance area were not surveyed. (Ex. 301 – **Biological Resources Figure D**.) Specifically, approximately 250 acres (6 percent) of the disturbance area for this alternative were not surveyed for desert tortoise or burrowing owl, and approximately 350 acres (8 percent) were not included in the State waters survey area. Botanical surveys covered the entire alternative, and fall surveys were published on October 26, 2010 (Ex. 64.). In consultation with the BLM, USFWS, and CDFG, staff have concluded that the lack of surveys for these areas does not preclude analysis of significance and assessment of the effectiveness of mitigation for several reasons. The primary reason was an in-field assessment of this area's habitat type and quality in relation to adjacent surveyed habitat, which appeared to be consistent with the unsurveyed habitat. Additionally, these areas are at the southern end of the proposed disturbance areas, and include areas influenced and disturbed by the I-10 corridor. These areas are not expected to differ in abundance or value from the adjacent intensively surveyed areas, and with implementation of pre-construction surveys outlined in Conditions of Certification **BIO-10** and **BIO-18**, as well as other impact minimization and mitigation measures in the Conditions of Certification, we conclude that impacts to biological resources will be fully mitigated. (Ex. 301, pp. C.2-154, C.2-155.)

6. Cumulative Impacts

A project may result in a significant adverse cumulative impact where its effects are "cumulatively considerable." Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (14 Cal. Code Regs., § 15065[A] [3].) The discussion of cumulative impacts should be guided by standards of practicality and reasonableness. (14 Cal. Code Regs., 14, § 15130[b].)

The following assessment of cumulative impacts is based primarily on a regional, quantitative (GIS-based) evaluation of past, present and future foreseeable projects (including the proposed Project or Reconfigured Alternatives 2 or 3) within the geographic scope of the NECO planning area. The NECO planning area is primarily in the Sonoran Desert region, but includes smaller portions of the adjacent southern Mojave Desert. Because NECO data used for the

cumulative analysis is regional in scope and incorporates different methodologies than Project site investigations (e.g., aerial photo interpretation versus field surveys), acreages identified for cumulative impacts differ from those identified for the Project-specific evaluations. For certain resources, a different geographic scope (i.e., other than NECO) was warranted, such as the use of watershed boundaries to analyze cumulative effects to desert washes. Additionally, a qualitative approach was used for certain indirect impact assessments, such as habitat fragmentation and effects to GDEs, as these effects are not readily subject to direct measurement from GIS data. (Ex. 301, pp. C.2-166 - C.2-170.)

A number of past, present and future foreseeable projects (cumulative projects) were identified for the assessment of potential cumulative impacts, including the proposed PSPP Project or Reconfigured Alternatives 2 or 3. A summary of potential cumulative impacts to biological resources is provided below.

Cumulative Impacts to Biological Resources

Construction and operation of the proposed Project would have cumulatively considerable effects in nearly every biological resource area analyzed. The most significant cumulative impacts of the proposed Project to biological resources are associated with effects to the Palen Dry Lake-Chuckwalla sand transport corridor, and the related loss of habitat for the MFTL and other dune dependent species, with these impacts considered significant and unmitigated for the proposed Project. Under Reconfigured Alternatives 2 and 3, potential cumulative impacts to the sand transport corridor, MFTL and other dune dependent species would be either less than significant or not cumulatively considerable with implementation of applicable Conditions of Certification. Based on these considerations, Reconfigured Alternatives 2 and 3 are preferred over the proposed Project with respect to biological resources, and we recommended them for adoption by the Commission.

A number of other potentially significant cumulative impacts to biological resources were also identified for the proposed Project and Reconfigured Alternatives 2 and 3, although Conditions of Certification were developed to minimize the associated contributions to less than cumulatively considerable levels.

Waters of the State

The cumulative effects to waters of the State from all cumulative projects are significant, and include approximately 40 miles of desert washes within the Palen watershed and 1,122 miles within the NECO planning area. The proposed Project would be contribute approximately 5.3 miles impacts of desert washes (or 13 percent of the watershed total), with the associated direct and indirect impacts considered cumulatively considerable. Associated impacts from Reconfigured Alternatives 2 and 3 would be slightly greater, due to minor increases in direct impacts (refer to **Tables 4 through 6**). The proposed Project and Reconfigured Alternatives 2 and 3 would implement appropriate measures to address potential impacts to waters of the State, including Condition of Certification **BIO-21**, **BIO-7**, **BIO-8** and **BIO-14**. We conclude that with implementation of these measures, contributions to cumulative impacts to waters of the State in the Palen watershed and NECO planning area from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Ex. 301, pp. C.2-173 - C.2-175.)

Special-Status and Sensitive Wildlife Species

Desert Tortoise

The cumulative projects would result in the loss of approximately 143,921 acres of moderate quality desert tortoise habitat in the NECO planning area, with the proposed Project contributing approximately 2.1 percent of this total (including 201 acres of designated critical habitat within the Chuckwalla Desert Tortoise CHU). Associated impacts from Reconfigured Alternatives 2 and 3 would be slightly greater, due to minor increases in direct impacts (refer to **Tables 4 through 6**). These direct Project impacts, coupled with the associated Project contribution to the loss of desert tortoise connectivity between designated critical habitat areas and other indirect effects (e.g., increased predation and roadkills), are cumulatively considerable for the proposed Project and Reconfigured Alternatives 2 and 3. With implementation of proposed Condition of Certification **BIO-12**, we find that the Project contribution to the cumulative loss of desert tortoise habitat would be reduced to a level less than cumulatively considerable for the proposed Project and Reconfigured Alternatives 2 and 3. A number of additional measures have also been adopted that would help to minimize indirect effects during operation and construction, including: **BIO-1** through **BIO-11**, and **BIO-14**. (Ex. 301, pp. C.2-175 - C.2-178.)

Mojave Fringe-toed Lizard

Total impacts to MFTL habitat from the cumulative projects would be approximately 103,604 acres in the NECO planning area, and 12,845 acres in Chuckwalla Valley. These impacts represent approximately 16.4 and 12.9 percent of the total habitat areas, respectively, and are considered significant. The proposed Project impacts include both direct (from construction) and indirect (e.g., from disruption of sand transport) effects, and would represent approximately 2.5 and 20 percent of the noted impacts in NECO and Chuckwalla Valley, respectively. Based on the extent of the proposed Project impacts, they would be cumulatively considerable. Mitigation to address the Project-related effects to the MFTL has been identified in Condition of Certification **BIO-20**. As described for Project-specific impacts, however, even with implementation of Condition of Certification **BIO-20**, impacts to the MFTL (and related effects to the sand transport corridor) from the proposed Project would remain cumulatively considerable. These impacts (particularly indirect impacts) would be substantially reduced under Reconfigured Alternatives 2 and 3. Accordingly, we find that implementation of either of these alternative scenarios, coupled with Condition of Certification **BIO-20**, would reduce associated impacts to sand dune dependent species (including the MFTL) to less than cumulatively considerable levels. (Ex. 301, pp. C.2-180, C.2-181, C.2-195 - C.2-199.)

The contribution to indirect effects associated with the spread of Sahara mustard from the proposed Project or Reconfigured Alternatives 2 and 3, which degrades the quality of MFTL habitat, is individually minor but cumulatively considerable. The evidence shows that this effect can be reduced to a level less than cumulatively considerable through implementation of Conditions of Certification **BIO-8** and **BIO-14**. (Exs. 301, pp. C.2-180, C.2-181; 303, pp. 16, 17.)

Golden Eagle

The proposed Project would impact approximately 3,570 acres of golden eagle foraging habitat within the NECO area, and 3,882 acres within a 140-mile radius of the Project site. Similar impacts associated with Reconfigured Alternatives 2 and 3 would be slightly greater, due to the larger overall areas of disturbance in applicable native habitats (refer to **Tables 4 through 6**). These impacts represent a small but cumulatively considerable amount of the total loss of associated habitats in the noted areas. (Ex. 301; pp. C.2-126 and C.2-127, **Biological Resources Table 15**.) A number of measures were identified to address impacts to golden eagle foraging habitats from the proposed Project or

Reconfigured Alternatives 2 and 3, including Conditions of Certification **BIO-8**, **BIO-12**, **BIO-14**, **BIO-16**, **BIO-22**, and **BIO-25**. The evidence indicates that, with the incorporation of these mitigation measures, the contribution to golden eagle impacts from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Exs. 301, pp. C.2-182 to C.2-185; 303 pp. 16, 17.)

American Badger and Desert Kit Fox

The cumulative projects would impact approximately 339,704 acres of American badger and desert kit fox habitat in the NECO planning area, representing 7 percent of the total mapped habitat. These impacts are considered significant, and the related contributions from the proposed Project or Reconfigured Alternatives 2 and 3 to the loss of habitat and related indirect effects (e.g., noise/lighting and spread of noxious weeds) are considered cumulatively considerable. A number of measures were identified to address Project-related impacts to American badger and desert kit fox habitat, including Conditions of Certification **BIO-8**, **BIO-12**, **BIO-14**, **BIO-17**, and **BIO-21**. The evidence indicates that, with the incorporation of these mitigation measures, the contribution to American badger and desert kit fox habitat impacts from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Exs. 301, p. C.2-187; 303, pp. 16, 17.)

Western Burrowing Owl

The contribution to the cumulative loss of burrowing owl habitat from the proposed Project or Reconfigured Alternatives 2 and 3 is comparable to the cumulative loss of badger and kit fox habitat, described above. Staff concluded that the loss of approximately 7 percent of associated habitat from the cumulative projects would be significant, and the contributions to that effect from the proposed Project or Reconfigured Alternatives 2 and 3 are cumulatively considerable. The proposed Project or Reconfigured Alternatives 2 and 3 will also contribute to cumulatively considerable impacts from habitat fragmentation and edge effects, noise and lighting, increased road kills, increased risk of fire from weed invasion and ignition sources (e.g., vehicles), and an increase in avian predators. A number of measures were identified to address Project-related impacts to burrowing owl habitat, including Conditions of Certification **BIO-8**, **BIO-12** through **BIO-14**, **BIO-18**, and **BIO-21**. The evidence indicates that, with the incorporation of these mitigation measures, contributions to burrowing owl

impacts from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Exs. 301, p. C.2-188; 303, pp. 16, 17.)

Le Conte's Thrasher

Total impacts to Le Conte's thrasher and other special-status or migratory bird habitat from the cumulative projects would be approximately 300,139 acres in the NECO planning area, or approximately 8.1 percent of the total habitat area. While contributions to these impacts from the proposed Project or Reconfigured Alternatives 2 and 3 are generally minor (approximately 1 percent or less), they are considered, at least incrementally, cumulatively considerable. A number of measures were identified to address impacts to Le Conte's thrasher and other special-status or migratory bird habitat from the proposed Project or Reconfigured Alternatives 2 and 3, including Conditions of Certification **BIO-8**, **BIO-15**, **BIO-16**, **BIO-21**, **BIO-23** and **BIO-24**. The evidence indicates that, with the incorporation of these mitigation measures, the contributions to Le Conte's and other special-status or migratory bird habitat loss impacts from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Ex. 301, pp. C.2-89, C.2-188 and C.2-189.)

Burro Deer

Burro deer is a subspecies of mule deer found in the Colorado Desert of Southern California, primarily along the Colorado River and in desert wash woodland communities. While impacts to burro deer range from the proposed Project or Reconfigured Alternatives 2 and 3, as depicted by NECO, are not cumulatively considerable, they would contribute to a cumulatively considerable loss of desert dry wash woodland within the Palen watershed. We conclude that with implementation of Condition of Certification **BIO-21**, contributions to the loss of burro deer habitat from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Ex. 301, p. C.2-189.)

Bats

The proposed Project site and reconfigured alternatives support foraging and roosting habitat for several special-status bat species. Roosting opportunities for bats are available in tree cavities, soil crevices and rock outcroppings primarily within dry desert wash woodland habitats. Bat roosts are known to occur in the Project area, including sites in the McCoy Mountains, Eagles Nest Mine (Little Maria Mountains) and Paymaster Mine. Bats likely utilize habitats throughout the

Study Area for foraging, but forage more commonly in areas such as desert washes where water and insects are more abundant.

While the proposed Project and Reconfigured Alternatives 2 and 3 would be substantial contributors to the cumulative loss habitat for the NECO planning area biological resources, including habitat for special-status bats. we have adopted Conditions of Certification **BIO-12** and **BIO-21** to offset the cumulative loss of habitat for these species and correspondingly reduce impacts nelow the level of significance. (Ex. 301, p. C.2-112.)

Other Special-status Wildlife Species

Other special status species evaluated in the RSA for which no cumulatively considerable impacts were identified from the proposed Project or Reconfigured Alternatives 2 and 3 include Nelson's bighorn sheep and Couch's spadefoot toad. (Ex. 301, pp. C.2-178 to C.2-179, and C.2-190.)

Wildlife Movement and Connectivity

Connectivity refers to the degree to which organisms can move among habitat patches and populations. Individuals must be able to move between patches to meet their resource needs, while populations must be connected to allow for dispersion, gene flow, and re-colonization. Three Multi-Species WHMAs are located in the general Project vicinity: Big Maria Mountains WHMA, Palen-Ford WHMA, and the DWMA Continuity WHMA (which provides connectivity between the Chuckwalla DWMA/ACEC south of I-10 and the Palen-Ford WHMA north of I-10 in the immediate Project vicinity). In both the Palen-Ford WHMA and the DWMA Continuity WHMA, the proposed Project and Reconfigured Alternatives 2 and 3 are major contributors to cumulative effects through the loss of associated Sonoran creosote bush scrub habitat (with these impacts slightly greater for Reconfigured Alternatives 2 and 3, refer to **Tables 4 through 6**). Thus, the proposed Project and Reconfigured Alternatives 2 and 3 could impede wildlife movement in these corridors and obstruct connectivity for wide ranging wildlife such as burro deer, kit fox, coyotes, and badgers, and on a population level could impede gene flow for desert tortoises. We conclude that with implementation of Conditions of Certification **BIO-12** and **BIO-20**, the contributions to wildlife movement and connectivity impacts from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Ex. 301, pp. C.2-190 to C.2-192.)

Natural Communities

Sonoran Creosote Bush Scrub and Desert Dry Wash Woodland

The proposed Project would incrementally contribute to the cumulative loss of Sonoran creosote bush scrub (3,422 acres, or 1.5 percent) and desert dry wash woodland (148 acres, or 0.3 percent) habitats in the NECO planning area, with impacts to desert dry wash woodland in Chuckwalla Valley representing 1.4 percent of the total area. Associated impacts from Reconfigured Alternatives 2 and 3 would be slightly greater, due to the extent of habitat loss (refer to **Tables 4 through 6**). We find that, with implementation of proposed mitigation measures, impacts to these natural communities from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. Specifically, these measures include Conditions of Certification **BIO-12**, **BIO-21** and **BIO-14** (Ex. 301, pp. C.2-192 to C. 2-193.)

Groundwater-dependent Ecosystems (GDEs)

As described in the **Soil and Water Resources** portion of this Decision, cumulative effects to groundwater levels are assumed to be significant, although contributions from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. Similar to the discussion of potential Project-specific impacts to GDEs, however, a number of uncertainties are associated with local groundwater tables and their relationships to biological resources. A number of measures were identified to address impacts to GDEs from the proposed Project or Reconfigured Alternatives 2 and 3, including Conditions of Certification **BIO-23** and **BIO-24**. The evidence indicates that, with the incorporation of these mitigation measures, the contribution to GDE impacts from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Ex. 301, p. C.2-199.)

Landforms

Impacts from the identified cumulative projects (including the proposed Project or Reconfigured Alternatives 2 and 3) to dunes, playas, and plains (including sandy plains, which make up a large portion of MFTL habitat) would be significant. Dunes and sandy plains also provide habitat for several rare plants in the region, including Harwood's milk-vetch. The contributions to cumulative effects to sand dunes from the proposed Project or Reconfigured Alternatives 2 and 3 would be cumulatively considerable, particularly when considering the previously described

anticipated indirect effects from obstructed winds and sand transport. Condition of Certification **BIO-20** requires implementation of impact avoidance and minimization measures and acquisition of dune habitat at a 3:1 ratio for the sand dune habitat loss attributable to the proposed Project or Reconfigured Alternatives 2 and 3, and a 1:1 ratio for other sandy habitats that support MFTL (e.g., sandy plains, sand-covered fans, and sand-covered playas). While implementation of **BIO-20** would offset the proposed Project's direct contribution to the loss of habitat, it would not mitigate the associated significant indirect effects of disrupted sand transport on habitat downwind of the Project. Accordingly, even with implementation of Condition of Certification **BIO-20**, impacts to sand-dependent landforms and species from the proposed Project would remain cumulatively considerable. As previously described, however, implementation of Condition of Certification **BIO-20** under Reconfigured Alternatives 2 and 3 would reduce all direct and indirect impacts to sand transport and related habitats and species below a level of significance. As a result, related impacts to sand-dependent landforms and species would not be cumulatively considerable for Reconfigured Alternatives 2 and 3. (Ex. 301, pp. C.2-195 and C.2-196.)

Contributions to cumulatively considerable indirect effects from the spread of Sahara mustard and other invasive pest plants into dunes and the adjacent habitats upslope under the proposed Project or Reconfigured Alternatives 2 and 3 will be minimized to a level less than cumulatively considerable through implementation of Conditions of Certification **BIO-8** and **BIO-14**.

Special-Status Plants

The analysis of cumulative impacts to special-status plants is focused on Harwood's milk-vetch, with these effects considered significant and the Project-related contribution identified by staff as cumulatively considerable. Project contributions to cumulative impacts may also be cumulatively considerable for a number of additional special-status, however, including Harwood's phlox, ribbed cryptantha, California ditaxis, glandular ditaxis, Palen Lake saltbush, Abram's spurge, flat-seeded spurge and lobed ground cherry. We have adopted a number of measures to address Project-related impacts to special-status plant species, including Conditions of Certification **BIO-8**, **BIO-14**, **BIO-19**, **BIO-20**, and **BIO-21**. The evidence indicates that, with the incorporation of these mitigation measures, the Project's contribution to special-status plant impacts would not be cumulatively considerable. (Exs. 301, pp. C.2-200 to C.2-202; 303, pp. 16, 17.)

Biotic Soils Crusts/Carbon Sequestration

The proposed Project or Reconfigured Alternatives 2 and 3 are expected to contribute to a cumulative reduction in greenhouse gases, although these benefits must also be weighed against the potential loss of carbon sequestration benefits from the desert vegetation and biological soil crusts. New evidence suggests that alkaline desert soils may confer even greater sequestration benefits than soil crusts. In order to build the PSPP facility under either the proposed Project or Reconfigured Alternatives 2 and 3, these plants and biotic soil crusts would be damaged and destroyed, and the sequestered carbon would be released back into the atmosphere. Based on these considerations, staff has concluded that these impacts of the proposed Project or Reconfigured Alternatives 2 and 3 may contribute to cumulatively considerable loss of sequestration benefits and release of stored carbon from all past, present, and probable future projects. (Ex. 301, p. C.2-139). A number of previously identified biological resource measures would address potential contributions to cumulative impacts from the loss of sequestration benefits from the proposed Project or Reconfigured Alternatives 2 and 3. Specifically, these include Conditions of Certification **BIO-8**, **BIO-12**, **BIO-19**, **BIO-20**, **BIO-21** and **BIO-22**. The evidence indicates that, with the incorporation of these mitigation measures, contributions to the cumulative loss of carbon sequestration benefits from the proposed Project or Reconfigured Alternatives 2 and 3 would not be cumulatively considerable. (Ex. 301, p. C.2-208.)

7. Public Comment

Staff received comments on the Biological Resources section of the SA/DEIS and on the November 23, 2009 Notice of Intent to Prepare an Environmental Impact Statement. Comments on biological resources were received from the following parties:

- Kenneth Waxlax, Peter Murray and Associates Real Estate, May 7, 2010
- Emailed comments from Brendan Hughes, Private Citizen, July 1, 2010
- Defenders of Wildlife, April 21, 2010
- Western Watersheds Project, December 23, 2009
- Western Watersheds Project, July 1, 2010
- The Wildlands Conservancy, December 23, 2009
- Center for Biological Diversity, December 23, 2009
- Center for Biological Diversity, July 1, 2010

- California/Nevada Desert Energy Committee of the Sierra Club, December 23, 2009
- California/Nevada Desert Energy Committee of the Sierra Club, July 1, 2010
- The Wilderness Society and the Natural Resources Defense Council, December 23, 2009
- The Wilderness Society and the Natural Resources Defense Council, July 1, 2010
- Defenders of Wildlife, December 23, 2009
- U.S. Environmental Protection Agency, December 11, 2009
- U.S. Environmental Protection Agency, July 12, 2010

These comments, and Staff's responses, are set forth in the RSA, Ex. 301, pp. C.2-212 - C.2-248.

FINDINGS OF FACT

Based on the uncontroverted record of evidence, we find the following:

1. The total area of disturbance associated with the proposed 5,200-acre Project ROW is approximately 4,024 acres, including the power plant site, access roads, and an associated off-site transmission line corridor.

2. The total areas of disturbance associated with Reconfigured Alternatives 2 and 3 are approximately 4,366 and 4,330 acres, respectively, including the power plant site, access roads, and an associated off-site transmission line corridor.

3. The 4,024-acre proposed Project disturbance area consists almost entirely of native habitats, including 148 acres of desert dry wash woodland, 164 acres of unvegetated ephemeral dry wash, 3,422 acres of Sonoran creosote bush scrub, and 285 acres of stabilized and partially stabilized desert dunes.

4. The 4,366-acre and 4,330-acre disturbance areas associated with Reconfigured Alternatives 2 and 3 consist almost entirely of native habitats, including the following respective acreages for Reconfigured Alternatives 2 and 3: (a) 208 and 198 acres of desert dry wash woodland; (b) 180 and 168 acres of unvegetated ephemeral dry wash; (c) 3,817 and 3,771 acres of Sonoran creosote bush scrub and (d) 156 and 188 acres of stabilized and partially stabilized desert dunes.

5. Electricity produced by the PSPP Project will be distributed via a new transmission line that would extend south across I-10 and connect to one

of the two potential sites identified for the planned Red Bluff Substation to be constructed by Southern California Edison as a separate project.

6. Twenty-three special status species were detected during Project Study Area surveys, including eight plant species (with one representing a potential new taxon), two reptile species (including the desert tortoise and MFTL), 10 bird species, and three mammal species.

7. Construction and operation of the proposed PSPP Project would result in potentially significant direct and/or indirect impacts to Biological Resources, including waters of the State, wildlife connectivity, sand transport corridors and related landforms (e.g., dunes), sensitive plant communities (including GDEs), special-status plant and wildlife species, and other native vegetation.

8. Condition of Certification **BIO-21** would reduce direct and indirect impacts to waters of the State from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

9. Condition of Certification **BIO-9** would reduce direct and indirect impacts to wildlife connectivity from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

10. Condition of Certification **BIO-20** would address direct impacts to sand dune habitats from the proposed Project and Reconfigured Alternatives 2 and 3, although indirect (downwind) impacts from the proposed Project would remain significant and unmitigated due to related sand shadow effects to the Palen Dry Lake-Chuckwalla sand transport corridor. These indirect impacts would be reduced below a level of significance under Reconfigured Alternatives 2 or 3, with implementation of Condition of Certification **BIO-20**.

11. Conditions of Certification **BIO-23** and **BIO-24** would reduce potential impacts to GDEs from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

12. Conditions of Certification **BIO-1** through **BIO-14**, and (potentially) **BIO-28**, would reduce direct and indirect impacts to the desert tortoise from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

13. Condition of Certification **BIO-20** would address direct impacts to the MFTL from the proposed Project and Reconfigured Alternatives 2 and 3, although indirect impacts to downwind habitat from the proposed Project would remain significant and unmitigated due to related sand shadow effects to the Palen Dry Lake-Chuckwalla sand transport corridor. These

indirect impacts would be reduced below a level of significance under Reconfigured Alternatives 2 or 3, with implementation of Condition of Certification **BIO-20**.

14. Condition of Certification **BIO-18** would reduce direct and indirect impacts to the western burrowing owl from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

15. Conditions of Certification **BIO-12**, **BIO-14**, **BIO-21** and **BIO-25**, would reduce direct and indirect impacts to the golden eagle from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

16. Conditions of Certification **BIO-8**, **BIO-12, BIO-15**, **BIO-16, and BIO-20** would reduce direct and indirect impacts to migratory/special-status bird species from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

17. Conditions of Certification **BIO-12 and BIO-17** would reduce direct and indirect impacts to the American badger and desert kit fox from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

18. Conditions of Certification **BIO-8**, **BIO-16**, and **BIO-26** would reduce indirect impacts to biological resources associated with construction noise, lighting/nocturnal collisions, electrocution, and evaporation ponds from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

19. Conditions of Certification **BIO-8**, **BIO-14**, **BIO-19**, and **BIO-20** through **BIO-24** would reduce direct and indirect impacts to special-status plant species from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

20. Conditions of Certification **BIO-8, BIO-14, and BIO-21** would reduce Project-related direct and indirect impacts to native (but non-special-status) cacti, succulents and trees from the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

21. Condition of Certification **BIO-22** would reduce direct and indirect impacts related to decommissioning of the proposed Project and Reconfigured Alternatives 2 and 3 below a level of significance.

22. Construction and operation of the PSPP and the identified cumulative projects would result in and/or contribute to potentially significant cumulative impacts to Biological Resources, including waters of the State,

special-status plant and wildlife species, wildlife movements/connectivity, natural communities, landforms, and carbon sequestration. With implementation of the Project-specific Conditions of Certification and Reconfigured Alternatives 2 or 3 the generation of/contribution to related potential cumulative impacts from the PSPP Project would not be cumulatively considerable.

CONCLUSION OF LAW

1. With implementation of Reconfigured Project Alternatives 2 or 3, as well as the Conditions of Certification listed below, development of the PSPP would comply with all applicable LORS and would not result in any unmitigated and significant direct, indirect or cumulative adverse impacts related to Biological Resources.

CONDITIONS OF CERTIFICATION

DESIGNATED BIOLOGIST SELECTION AND QUALIFICATIONS[4]

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(s), with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval in consultation with CDFG and USFWS.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
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. Have at least one year of field experience with biological resources found in or near the Project area;

[4] USFWS <www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt> designates biologists who are approved to handle tortoises as "Authorized Biologists." Such biologists have demonstrated to the USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately, and have received USFWS approval. Authorized Biologists are permitted to then approve specific monitors to handle tortoises, at their discretion. The California Department of Fish and Game (CDFG) must also approve such biologists, potentially including individual approvals for monitors approved by the Authorized Biologist. **Designated Biologists are the equivalent of Authorized Biologists.** Only Designated Biologists and certain Biological Monitors who have been approved by the Designated Biologist would be allowed to handle desert tortoises.

4. Meet the current USFWS Authorized Biologist qualifications criteria (www.fws.gov/ventura/speciesinfo/protocols_guidelines), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS; and
5. Possess a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, 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: At least 30 days prior to construction-related ground disturbance, the Project owner shall submit the resumes of the Designated Biologists(s) along with the completed USFWS Desert Tortoise Authorized Biologist Request Form (www.fws.gov/ventura/speciesinfo/protocols_guidelines) and submit it to the USFWS and the CPM for review and final approval.

No construction-related ground disturbance, grading, boring, or trenching 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 at least 10 working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the Project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The Project owner shall ensure that the Designated Biologist performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring, or trenching activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the Project owner and the CPM. The Designated Biologist Duties shall include the following:

1. Advise the Project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the Project owner;
3. 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;

4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. 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;
6. Notify the Project owner and the CPM of any non-compliance with any biological resources condition of certification;
7. Respond directly to inquiries of the CPM regarding biological resource issues;
8. 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;
9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>; and
10. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, and the CPM, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Database (CNDDB).

Verification: The Designated Biologist shall provide copies of all written reports and summaries that document biological resources compliance activities in the Monthly Compliance Reports submitted to the CPM. 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 his or her duties cease, as approved by the CPM.

BIOLOGICAL MONITOR SELECTION AND QUALIFICATIONS

BIO-3 The Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the CPM. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks. The Biological Monitor is the equivalent of the USFWS designated Desert Tortoise Monitor (USFWS 2008).

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the conditions of certification, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>.

Verification: The Project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site mobilization or construction-related ground disturbance, grading, boring, and trenching. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) has been trained including the date when training was completed. If additional biological monitors are needed during construction the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIOLOGICAL MONITOR DUTIES

BIO-4 The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, fencing, grading, boring, trenching, or reporting. The Designated Biologist shall remain the contact for the Project owner and the CPM.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources compliance activities, including those conducted 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.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

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. The Project owner shall provide Energy Commission staff with reasonable access to the Project site under the control of the Project owner and shall otherwise fully cooperate with the Energy Commission’s efforts to verify the Project owner’s compliance with, or the effectiveness of, mitigation measures set forth in the conditions of certification. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. 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, boring, trenching, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. 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;
2. Inform the Project owner and the construction/operation manager when to resume activities; and
3. Notify the CPM if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage. If the work stoppage relates to desert tortoise or any other federal- or state-listed species, the Carlsbad Office of the USFWS and the Ontario Office of the CDFG shall also be notified.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The Project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM and BLM 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, or operation activities. If the non-compliance or halt to construction or operation relates to desert tortoise or any other federal- or state-listed species, the Project owner shall also notify Carlsbad Office of the USFWS and the Ontario Office of the CDFG at the same time. The Project owner shall notify 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 will be made by the CPM in consultation with BLM, USFWS and CDFG within 5 working days after receipt of notice that corrective action is completed, or the Project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-6 The Project owner shall develop and implement a Project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the CPM. The Project owner shall also provide the USFWS and CDFG a copy of all portions of the WEAP relating to desert tortoise and any other federal or state-listed species for review and comment. 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 preconstruction, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which

supporting written material and electronic media, including photographs of protected species, is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the Project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes or other wildlife shall be harmed;
3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
4. Include a discussion of fire prevention measures to be implemented by workers during Project activities and request workers to: a) dispose of cigarettes and cigars appropriately and not leave them on the ground or buried, b) keep vehicles on graveled or well-maintained roads at all times to prevent vehicle exhaust systems from coming in contact with roadside weeds, c) use and maintain approved spark arresters on all power equipment, and d) keep a fire extinguisher on hand at all times
5. Describe the temporary and permanent habitat protection measures to be implemented at the Project site;
6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
7. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 30 days prior to start of construction-related ground disturbance, the Project owner shall provide to the CPM for review and approval and to BLM, USFWS and CDFG a copy of the final 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 10 days prior to construction-related ground disturbance activities the Project owner shall submit two copies of the approved final WEAP.

Training acknowledgement forms signed during construction shall be kept on file by the Project owner for at least 6 months after the start of commercial operation.

Throughout the life of the Project, the WEAP shall be repeated annually for permanent employees, and shall be routinely administered within 1 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 attended the program and understand all protection measures. These forms shall be maintained by the Project owner and shall be made available to the CPM, BLM, USFWS and CDFG and 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 6 months following the termination of an individual's employment.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-7 The Project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and shall submit two copies of the proposed BRMIMP to the CPM and BLM for review and approval and USFWS and CDFG for review. The Project owner shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Desert Tortoise Translocation Plan, the Raven Management Plan, the Closure, Conceptual Restoration Plan, the Burrowing Owl Mitigation and Monitoring Plan, the Weed Management Plan, and all other individual biological mitigation and/or monitoring plans associated with the Project. The Project owner shall provide to CDFG and USFWS a copy of all portions of the BRMIMP relating to desert tortoise and any other federal or state-listed species for review and comment.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the Project owner;
2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;
4. All sensitive biological resources to be impacted, avoided, or mitigated by Project construction, operation, and closure;
5. All required mitigation measures for each sensitive biological resource;

6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
9. All performance standards and remedial measures to be implemented if performance standards are not met;
10. Biological resources-related facility closure measures including a description of funding mechanism(s);
11. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
12. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the Project site, or during Project surveys, to the CNDDB per CDFG and BLM requirements.

Verification: The Project owner shall submit the draft BRMIMP to the CPM and BLM at least 30 days prior to start of any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching. At the same time the Project owner shall provide to CDFG and USFWS a copy of all portions of the draft BRMIMP relating to desert tortoise and any other federal or state-listed species. The Project owner shall provide final BRMIMP to the CPM, BLM, CDFG and USFWS at least 7 days prior to start of any construction-related ground disturbance, grading, boring, and trenching. The BRMIMP shall contain all of the required measures included in all biological conditions of certification. No construction-related ground disturbance, grading, boring, or trenching may occur prior to approval of the final BRMIMP by the CPM and BLM.

If any permits have not yet been received when the final BRMIMP is submitted, these permits shall be submitted to the CPM within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition(s). The Project owner shall submit to the CPM and BLM the revised or supplemented BRMIMP within 10 days following the Project owner's receipt of any additional permits. Under no circumstances shall ground disturbance proceed without implementation of all permit conditions.

To verify that the extent of construction disturbance does not exceed that described in these conditions, the Project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM, BLM, USFWS and CDFG. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and shall be submitted prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction, and shall be submitted to the CPM, BLM, USFWS and CDFG no later than 90 days after completion of construction. The Project owner shall also provide a final accounting in whole acres of

vegetation communities/cover types present before and after construction. Construction acreages shall be rounded to the nearest acre.

Any changes to the approved BRMIMP must be approved by the CPM and BLM in consultation with CDFG and USFWS.

Implementation of BRMIMP measures (for example, construction activities that were monitored, species observed) shall 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 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 preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and which mitigation and monitoring items are still outstanding.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-8 The Project owner shall undertake the following measures to manage the Project site and related facilities during construction, operation and maintenance in a manner to avoid or minimize impacts to biological resources:

1. Limit Disturbance Areas. Minimize soil disturbance by locating staging areas, laydowns, and temporary parking or storage for linears in existing disturbed areas. Equipment maintenance and refueling shall not be conducted within 100 feet of any sensitive resource (for example, waters of the state, desert dry wash woodland, dune habitats and rare plant populations). Limit the width of the work area near sensitive resources. Avoid blading temporary access roads where feasible and instead drive over and crush the vegetation to preserve the seed bank and biotic soil crusts. 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 in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, Project vehicles and equipment shall be confined to the flagged areas.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the

route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. Minimize Traffic Impacts. Vehicular traffic during Project construction and operation shall be confined to existing routes of travel to and from the Project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour within the Project area, on maintenance roads for linear facilities, or on access roads to the Project site.

4. Monitor During Construction. In areas that have not been fenced with desert tortoise exclusion fencing and cleared, the Designated Biologist shall be present at the construction site during all Project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall clear ahead of equipment during brushing and grading activities. If desert tortoises are found during construction monitoring, procedures outlined in **BIO-9** shall be implemented.

5. Minimize Impacts of Transmission/Pipeline Alignments, Roads, and Staging Areas. Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and 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) S*uggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 1994) to reduce the likelihood of large bird electrocutions and collisions. Where feasible avoid impacts to desert washes and special-status plants by adjusting the locations of poles and laydown areas, and the alignment of the roads and pipelines. Construction drawings and grading plans shall depict the locations of sensitive resources and demonstrate where temporary impacts to sensitive resources can be avoided and where they cannot.

6. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

7. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.

8. Minimize Noise Impacts. A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce

noise levels in sensitive habitat proximate to the Project site. Loud construction activities (e.g., unsilenced high pressure steam blowing, pile driving, or other) shall be avoided from February 15 to April 15, when it would result in noise levels over 65 dBA in nesting habitat (excluding noise from passing vehicles). Loud construction activities may be permitted from February 15 to April 15 only if:

a. The Designated Biologist provides documentation (i.e., nesting bird data collected using methods described in **BIO-15** and maps depicting location of the nest survey area in relation to noisy construction) to the CPM indicating that no active nests would be subject to 65 dBA noise, OR

b. The Designated Biologist or Biological Monitor monitors active nests within the range of construction-related noise exceeding 65 dBA. The monitoring shall be conducted in accordance with Nesting Bird Monitoring and Management Plan approved by the CPM. The Plan shall include adaptive management measures to prevent disturbance to nesting birds from construction related noise. Triggers for adaptive management shall be evidence of Project-related disturbance to nesting birds such as: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Nesting Bird Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of disturbance to the nesting bird.

9. Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed outside the areas fenced with desert tortoise exclusion fencing it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may move it out of harms way as described in the USFWS Desert Tortoise Field Manual (USFWS 2009a)

10. Install Box Culvert. To provide for connectivity for desert tortoise and other wildlife, the Project owner shall install a box culvert suitable for passage by desert tortoise and other wildlife under the Project Site Access Road. The box culvert shall be a concrete structure no less than 4 feet high and 6 feet wide with 3:1 side slopes and shall maintain a minimum of 18 inches of native material on the floor of the culvert at all times to facilitate tortoise movement.

11. Avoid Wildlife Pitfalls. To avoid trapping desert tortoise and other wildlife in trenches, pipes or culverts, the following measures shall be implemented:

    a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day, at the end of each workday, and at the beginning of each day by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall move the tortoise out of harm's way as described in the USFWS Desert Tortoise Field Manual (USFWS 2009a). Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

    b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for tortoises 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 elevated pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed.

12. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.

13. Dispose of Road-killed Animals. Road killed animals or other carcasses detected by personnel on roads associated with the Project area will be reported immediately to a Biological Monitor or Designated Biologist (or Project Environmental Compliance Monitor, during Project operations), who will promptly remove the

roadkill. For special-status species road-kill, the Biological Monitor or Designated Biologist (or Project Environmental Compliance Monitor, during Project operations) shall contact CDFG and USFWS within 1 working day of detection of the carcass for guidance on disposal or storage of the carcass; all other road kill shall be disposed of promptly. The Biological Monitor shall provide the special-status species record as described in **BIO-11** below.

14. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the Project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

15. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the Project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. Vehicular traffic 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 when traveling on dirt access routes within desert tortoise habitat shall not exceed 25 miles per hour.

16. Implement Sediment Control Measures Near Desert Washes. Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter waters of the state. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. Areas of disturbed soils (access and staging areas) which slope toward drainages shall be stabilized to reduce erosion potential.

17. Monitor Ground Disturbing Activities Prior to Pre-Construction Site Mobilization. If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

18. Control Unauthorized Use of the Project Access Roads. The secondary access road shall be gated at both ends and restricted

to emergency response personnel as per proposed **COC WORKER SAFETY-6**. The Project owner shall also monitor and control any unauthorized use of the Project roads with gates, signage, and fencing as necessary to minimize traffic-related roadkills and ORV disturbance off-roads.

19. Implement Erosion Control Measures. All disturbed soils and roads within the Project site shall be stabilized to reduce erosion potential, both during and following construction. All areas subject to temporary disturbance shall be restored to pre-project grade and stabilized to prevent erosion and promote natural revegetation. Temporarily disturbed areas within the Project area include, but are not limited to: linear facilities, temporary access roads, temporary lay-down and staging areas. If erosion control measures include the use of seed, only locally native plant species from a local seed source shall be used. Local seed includes seeds from plants within the Chuckwalla Valley or Colorado River Hydrologic Units.

20. Avoid Spreading Weeds. Prior to the start of construction, flag and avoid dense populations of highly invasive noxious weeds. If these areas cannot be avoided, they shall be pre-treated by the methods described in **BIO-14** (Weed Management Plan). Noxious weeds and other invasive non-native plants in the temporarily disturbed areas shall be managed according to the requirements in BIO-14.

21. Salvage Topsoil. Topsoil from the Project site shall be salvaged, preserved and re-used for restoration of temporarily disturbed areas. Salvaged topsoil shall be collected, stored and applied in a way that maintains the viability of seed and soil crusts. The Project owner shall excavate and collect the upper soil layer (the top 1 to 2 inches that includes the seed bank and biotic soil crust) as well as the lower soil layer up to a depth of 6 to 8 inches. The upper and lower soil layers shall be stockpiled separately in areas that will not be impacted by other grading, flooding, erosion, or pollutants. If the soil is to be stored more than 2 weeks it shall be spread out to a depth of no more than 6 inches to maintain the seed and soil crust viability. The Project owner shall install temporary construction fencing around stockpiled topsoil, and signage that indicates whether the pile is the upper layer seed bank, or the lower layer, and clearly indicates that the piles are for use only in erosion control. After construction, the Project owner shall replace the topsoil in the temporarily disturbed areas in the reverse order of stockpiling, starting with the 6-8 inch layer of subsoil, and then the seed-containing upper layer using a harrow or similar equipment to thinly distribute the layer to depths no greater than 1 to 2 inches.

22. Decommission Temporary Access Roads with Vertical Mulching. Discourage ORV use of temporary construction roads by installing vertical mulching at the head of the road to a distance necessary to

obscure the road from view. Boulder barricades and gates shall not be used unless the remainder of the site is fenced to prevent driving around the gate or barricade. Designated ORV routes and roads shall not be closed.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall 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 the CPM, for review and approval, a written construction termination report identifying how measures have been completed. As part of the Annual Compliance Report, each year following construction the Designated Biologist shall provide a report to the CPM that describes compliance with avoidance and minimization measures to be implemented during operation (for example, a summary of the incidence of roadkilled animals during the year, implementation of measures to avoid toxic spills, erosion and sedimentation, efforts to enforce worker guidelines, etc.).

No less than 30 days prior to construction-related ground disturbance the Project owner shall provide the CPM, USFWS and CDFG with plans showing the design of a culvert under the Project Site Access Road that would provide access for desert tortoise and other wildlife. No less than 30 days after of completion of construction of the Project site access road the Project owner shall provide as-built drawings of the culvert.

If loud construction activities are proposed between February 15 to April 15 which would result in noise levels over 65 dBA in nesting habitat, the Project owner shall submit nest survey results (as described in 8a) to the CPM no more than 7 days before initiating such construction. If an active nest is detected within this survey area the Project owner shall submit a Nesting Bird Monitoring and Management Plan to the CPM for review and approval no more than 7 days before initiating noisy construction.

DESERT TORTOISE CLEARANCE SURVEYS AND FENCING

BIO-9 The project owner shall undertake appropriate measures to manage the project site and related facilities in a manner to avoid or minimize impacts to desert tortoise**.** Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling and other procedures shall be consistent with those described in the USFWS' Desert Tortoise Field Manual (USFWS 2009) http://www.fws.gov/ventura/speciesinfo/protocols_guidelines or more current guidance provided by CDFG and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion prepared by USFWS. The project owner shall implement the following measures:

1. Desert Tortoise Fencing along Interstate 10. To avoid increases in vehicular-related mortality from disruption of local movement

patterns along the existing ephemeral wash systems, permanent desert tortoise-proof fencing shall be installed along the existing freeway right-of-way fencing, on both sides of Interstate 10 (I-10) between the wash on the westernmost end of the proposed Project site and the easternmost wash associated with the proposed Project site (labeled as #10 and #12 in Wildlife Movement and Desert Tortoise Habitat [tn56755], AECOM 2010f). The project owner shall secure approval from California Department of Transportation (Caltrans) for the installation and maintenance of desert tortoise exclusion fencing prior to construction or repair. If either Reconfigured Alternative 2 or Reconfigured Alternative 3 is selected, the fence shall extend from the westernmost wash (#10) to the wash immediately east of the alternative disturbance area (#13). The tortoise fencing shall be designed to direct tortoises to existing undercrossing to provide safe passage under the freeway, and shall be inspected per 2.d. and maintained for the life of the Project.

2. Desert Tortoise Exclusion Fence Installation. To avoid impacts to desert tortoises, permanent exclusion fencing shall be installed along the permanent perimeter security fence (boundaries) as phases are constructed. Temporary fencing shall be installed along any subset of the plant site phasing that does not correspond to permanent perimeter fencing. Temporary fencing shall be installed along linear features unless a Biological Monitor is present in the immediate vicinity of construction activities for the linear facility. All fencing shall be flagged and surveyed within 24 hours prior to the initiation of fence construction. Clearance surveys of the desert tortoise exclusionary fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) using techniques outlined in the Desert Tortoise Field Manual (USFWS 2009) and may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her supervision. These fence clearance surveys shall provide 100-percent coverage of all areas to be disturbed and an additional transect along both sides of the fence line. Disturbance associated with desert tortoise exclusionary fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Prior to the surveys the project owner shall provide to the CPM, CDFG and USFWS a figure clearly depicting the limits of construction disturbance for the proposed fence installation. The fence line survey area shall be 90 feet wide centered on the fence alignment. Where construction disturbance for fence line installation can be limited to 15 feet on either side of the fence line, this fence line survey area may be reduced to an area approximately 60 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. For the I-10 desert tortoise exclusion

fence, the Project Owner may have a Designated Biologist present to clear ahead of fence construction and be present in the immediate vicinity of fence installation activities. Desert tortoise located within the utility ROW alignments shall be moved out of harm's way in accordance with the USFWS Desert Tortoise Field Manual (USFWS 2009). Any desert tortoise detected during clearance surveys for fencing within the plant site and along the perimeter fence alignment shall be translocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan (BIO-10). Tortoise shall be handled by the Designated Biologist(s) in accordance with the USFWS' Desert Tortoise Field Manual (USFWS 2009).

a. Timing and Supervision of Fence Installation. The exclusion fencing shall be installed in any area subject to disturbance prior to the onset of site clearing and grubbing in that area. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

b. Fence Material and Installation. All desert tortoise exclusionary fencing shall be constructed in accordance with the USFWS' Desert Tortoise Field Manual (USFWS 2009) (Chapter 8 – Desert Tortoise Exclusion Fence).

c. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time.

d. Fence Inspections. Following installation of the desert tortoise exclusion fencing for both the permanent and temporary fencing, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and within 24 hours following all major rainfall events or after notification of an accident. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Repairs on I-10 fencing shall occur after any required authorization from Caltrans for work within their Right-of-Way. Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing,

during and within 24 hours following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise.

3. Desert Tortoise Clearance Surveys within the Plant Site. Clearance surveys shall be conducted in accordance with the USFWS Desert Tortoise Field Manual (USFWS 2009) (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of two surveys covering 100 percent the project area by walking transects no more than 15-feet apart. If a desert tortoise is located on the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction to allow opposing angles of observation. Clearance surveys of the plant site may only be conducted when tortoises are most active (April through May or September through October) unless the project receives approval from CDFG and USFWS. Clearance surveys of linear features may be conducted during anytime of the year. Any tortoise located during clearance surveys of the power plant site and linear features shall be translocated or relocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan:

   a. Burrow Searches. During clearance surveys all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS Desert Tortoise Field Manual (USFWS 2009). To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined in accordance with the Desert Tortoise Relocation/Translocation Plan. Tortoises taken from burrows and from elsewhere on the power plant site shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.

   b. Burrow Excavation/Handling. All potential desert tortoise burrows located during clearance surveys would be excavated by hand, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises in accordance with the Desert Tortoise Relocation/Translocation Plan. All desert tortoise handling, and removal, and burrow excavations, including nests, would be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the USFWS Desert Tortoise Field Manual (USFWS 2009).

4. Monitoring Following Clearing. Following the desert tortoise. clearance and removal from the power plant site and utility corridors, workers and heavy equipment shall be allowed to enter the project site to perform clearing, grubbing, leveling, and trenching activities. A Designated Biologist or Biological Monitor shall be onsite for clearing and grading activities to move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan

5. Reporting. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert. Desert tortoise moved from within project areas shall be marked and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to BLM, the CPM, USFWS, and CDFG describing implementation of each of the mitigation measures listed above. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises, and any other information needed to demonstrate compliance with the measures described above.

Within 6 months of completion of desert tortoise exclusion fence for Phase 1, I-10 desert tortoise exclusion fencing shall be installed. Within 3 months of completion of I-10 desert tortoise exclusion fence construction, the Project owner shall provide the CPM, BLM, USFWS, and CDFG with maps as well as photographic documentation showing the design and location of the fencing on both sides of I-10 south of the Project site.

The Project Owner shall provide evidence of approval from Caltrans for installation of desert tortoise fencing along I-10 within their right-of-way at least 30-days prior to construction of the fencing.

DESERT TORTOISE RELOCATION/TRANSLOCATION PLAN

BIO-10 The Project owner shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of the CPM. The Plan shall include guidance specific to each of the two phases of Project construction, as described in **BIO-29** (Phasing), and shall

include measures to minimize the potential for repeated translocations of individual desert tortoises. The goals of the Desert Tortoise Relocation/Translocation Plan shall be to: relocate/translocate all desert tortoises from the project site to nearby suitable habitat; minimize impacts on resident desert tortoises outside the project site; minimize stress, disturbance, and injuries to relocated/translocated tortoises; and assess the success of the translocation effort through monitoring. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the Applicant (AECOM 2010a, DR-BIO-55) and shall include all revisions deemed necessary by BLM, USFWS, CDFG and the Energy Commission staff.

Verification: At least 30 days prior to site mobilization, the Project owner shall provide the CPM with the final version of a Plan that has been reviewed and approved by the CPM in consultation with BLM, USFWS and CDFG. All modifications to the approved Plan shall be made only after approval by the CPM, in consultation with BLM, USFWS and CDFG.

Within 30 days after initiation of relocation and/or translocation activities, the Designated Biologist shall provide to the CPM for review and approval, a written report identifying which items of the Plan have been completed, and a summary of all modifications to measures made during implementation of the Plan.

DESERT TORTOISE COMPLIANCE VERIFICATION

BIO-11 The Project owner shall provide Energy Commission, BLM, CDFG and USFWS staff with reasonable access to the Project site and compensation lands under the control of the Project owner and shall otherwise fully cooperate with the Energy Commission's and BLM's efforts to verify the Project owner's compliance with, or the effectiveness of, mitigation measures set forth in the conditions of certification. The Designated Biologist shall do all of the following:

1. Notification. Notify the CPM at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify 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;

2. Monitoring During Grubbing and Grading. Remain onsite daily while vegetation salvage, grubbing, grading and other ground-disturbance construction activities are taking place to avoid or minimize take of listed species, and verify personally or use Biological Monitors to check for compliance with all impact avoidance and minimization measures, including checking all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.

3. Monthly Compliance Inspections. Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the CPM, BLM, USFWS and CDFG during construction

4. Notification of Injured or Dead Listed Species. If an injured or dead listed species is detected within or near the Project Disturbance Area the CPM, BLM, the Ontario Office of CDFG, and the Carlsbad Office of USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:

    a. Injured Desert Tortoise. If a desert tortoise is injured as a result of Project-related activities during construction, the Designated Biologist or approved Biological Monitor shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the Project owner. Following phone notification as required above, the CPM, CDFG, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, and location, circumstances of the incident, and the name of the facility where the animal was taken.

    b. Desert Tortoise Fatality. If a desert tortoise is killed by Project-related activities during construction or operation, a written report with the same information as an injury report shall be submitted to the CPM, BLM, the Ontario Office of CDFG, and the Carlsbad Office of USFWS. These desert tortoises shall be salvaged according to guidelines described in *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise* (Berry 2001). The Project owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

5. Final Listed Species Report. The Designated Biologist shall provide the CPM and BLM a Final Listed Species Mitigation Report that includes, 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 listed species; 3) information about other Project impacts on the listed species; 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 listed species; and 7) any other pertinent information, including the level of take of the listed species associated with the Project.

6. Stop Work Order. The CPM may issue the Project owner a written stop work order to suspend any activity related to the construction or operation of the Project to prevent or remedy a violation of one or more conditions of certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The Project owner shall comply with the stop work order immediately upon receipt thereof.

Verification: No later than 2 days following the above required notification of a sighting, injury, kill, or relocation of a listed species, the Project owner shall deliver to the CPM, BLM, CDFG, and USFWS via FAX or electronic communication the written report from the Designated Biologist describing all reported incidents of 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 the CPM, BLM, CDFG and USFWS.

No later than 45 days after initiation of Project operation the Designated Biologist shall provide the CPM and BLM a Final Listed Species Mitigation Report.

Beginning with the first month after clearing, grubbing and grading are completed and continuing every month until construction is complete the Project owner shall submit a report describing the results of Monthly Compliance Inspections to the CPM, BLM, USFWS and CDFG.

DESERT TORTOISE COMPENSATORY MITIGATION

BIO-12 To fully mitigate for habitat loss and potential take of desert tortoise, the Project owner shall provide compensatory mitigation per **BIO-29** – Table 2, adjusted to reflect the final Project footprint. For purposes of this condition, the Project footprint means all lands disturbed in the construction and operation of the Palen Project, including all Project linears, as well as undeveloped areas inside the Project's boundaries that will no longer provide viable long-term habitat for the desert tortoise. To satisfy this condition, the Project owner shall acquire, protect and transfer 5 acres of desert tortoise habitat for every acre of habitat within critical habitat and within the final Project footprint, and 1 acre of desert tortoise habitat for every acre of habitat outside of critical habitat but within the final Project footprint, and provide associated funding for the acquired lands, as specified below. Condition **BIO-28** may provide the Project owner with another option for satisfying some or all of the requirements in this condition. In lieu of acquiring lands

itself, the Project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as provided below in section 3.i. of this condition.

The timing of the mitigation shall correspond with the timing of the site disturbance activities as stated in **BIO-29** (phasing). If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

1. Selection Criteria for Compensation Lands. The compensation lands selected for acquisition in fee title or in easement shall:

    a. be within the Colorado Desert Recovery Unit, with potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;

    b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;

    c. be prioritized near larger blocks of lands that are either already protected or planned for protection, such as DWMAs within the Colorado Desert Recovery Unit (Chuckwalla DWMA as first priority, Chemehuevi DMWA as the second) or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

    d. be connected to lands with desert tortoise habitat equal to or better quality than the Project Site, ideally with populations that are stable, recovering, or likely to recover;

    e. not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible;

    f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

    g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and

    h. have water and mineral rights included as part of the acquisition, unless the CPM, in consultation with CDFG, BLM and USFWS, agrees in writing to the acceptability of the land.

2. Review and Approval of Compensation Lands Prior to Acquisition. The Project owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS, and BLM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above. Approval from the CPM and CDFG, in consultation with BLM and the USFWS, shall be required for acquisition of all compensatory mitigation parcels.

3. Compensation Lands Acquisition Requirements. The Project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM and CDFG, in consultation with BLM and the USFWS, have approved the proposed compensation lands:

   a. Preliminary Report. The Project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM and CDFG. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM and CDFG, in consultation with BLM and the USFWS. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

   b. Title/Conveyance. The Project owner shall transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the CPM and CDFG. Transfer of either fee title or an approved conservation easement will usually be sufficient, but some situations, e.g., the donation of lands burdened by a conservation easement to BLM, will require that both types of transfers be completed. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM under terms approved by the CPM and CDFG. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary.

   c. Initial Habitat Improvement Fund. The Project owner shall fund the initial protection and habitat improvement of the compensation lands. Alternatively, a non-profit organization may hold the habitat improvement funds if it is qualified to manage

the compensation lands (pursuant to California Government Code section 65965) and if it meets the approval of CDFG and the CPM. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

d. Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate long-term maintenance and management fee to fund the in-perpetuity management of the acquired mitigation lands.

e. Long-term Maintenance and Management Fund. In accordance with **BIO-29** (phasing), the Project owner shall deposit in NFWF's REAT Account a capital long-term maintenance and management fee in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands.

   The CPM, in consultation with CDFG, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision.

f. Interest, Principal, and Pooling of Funds. The Project owner, the CPM and CDFG shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:

   i. Interest. Interest generated from the initial capital long-term maintenance and management fee shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.

   ii. Withdrawal of Principal. The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party long-term maintenance and management fee manager to ensure the continued viability

of the species on the compensation lands. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFG designates NFWF or another entity to manage the long-term maintenance and management fee for CDFG.

iii. Pooling Long-Term Maintenance and Management Fee Funds. CDFG, or a CPM-and CDFG-approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the endowment with other endowments for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFG and CPM.

g. Other expenses. In addition to the costs listed above, the Project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to title and document review costs, expenses incurred from other state agency reviews, and overhead related to providing compensation lands to CDFG or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.

h. Mitigation Security. The Project owner shall provide financial assurances in accordance with **BIO-29** (phasing) to the CPM and CDFG with copies of the document(s) to BLM and the USFWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this condition. These funds shall be used solely for implementation of the measures associated with the Project in the event the Project owner fails to comply with the requirements specified in this condition, or shall be returned to the Project owner upon successful compliance with the requirements in this condition. The CPM's or CDFG's use of the security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition. Financial assurance can be provided to the CPM and CDFG in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the Project owner shall obtain the CPM's approval in consultation with CDFG. BLM and the USFWS, of the form of the Security. Security shall be provided as described in **BIO-29 – Table 3** and the beginning of the conditions of certification

subsection. The actual costs to comply with this condition will vary depending on the final footprint of the Project and its two phases, and the actual costs of acquiring, improving and managing the compensation lands.

i. NFWF REAT Account. The Project owner may elect to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the same amounts as the security required in section 3.h., above, and may be provided in lieu of security. If this option is used for the acquisition and initial improvement, the Project owner shall make an additional deposit into the REAT Account if necessary to cover the actual acquisition costs and administrative costs and fees of the compensation land purchase once land is identified and the actual costs are known. If the actual costs for acquisition and administrative costs and fees are less than described in **Biological Resources Table 6b**, the excess money deposited in the REAT Account shall be returned to the Project owner. Money deposited for the initial protection and improvement of the compensation lands shall not be returned to the Project owner.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission and CDFG. Such delegation shall be subject to approval by the CPM and CDFG, in consultation with BLM and USFWS, prior to land acquisition, initial protection or maintenance and management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be implemented with 18 months of the Energy Commission's approval.

Verification: If the mitigation actions required under this condition are not completed prior to the start of ground-disturbing activities, the Project owner shall provide the CPM and CDFG with an approved form of Security in accordance with this condition of certification no later than 30 days prior to beginning Project ground-disturbing activities. Actual Security shall be provided no later than 7 days prior to the beginning of Project ground-disturbing activities. If Security is provided, the Project owner, or an approved third party, shall complete and provide written verification to the CPM, CDFG, BLM and USFWS of the compensation lands acquisition and transfer within 18 months of the start of Project ground-disturbing activities.

The Project owner may elect to fund the acquisition and initial improvement of compensation lands through NFWF or other approved third party by depositing

funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the same amounts as the Security required in section 3.h. of this condition. Payment of the initial funds for acquisition and initial improvement must be made at least 30 days prior to the start of ground-disturbing activities.

No fewer than 90 days prior to acquisition of the property, the Project owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS, and BLM describing the parcels intended for purchase and shall obtain approval from the CPM and CDFG prior to the acquisition.

No fewer than 30 days after acquisition of the property the Project owner shall deposit the funds required by Section 3e above (long term management and maintenance fee) and provide proof of the deposit to the CPM.

The Project owner, or an approved third party, shall provide the CPM, CDFG, BLM, and USFWS with a management plan for the compensation lands within180 days of the land or easement purchase, as determined by the date on the title. The CPM shall review and approve the management plan for the compensatory mitigation lands, in consultation with CDFG, BLM and the USFWS.

Within 90 days after completion of all project related ground disturbance, the Project owner shall provide to the CPM, CDFG, BLM and USFWS an analysis, based on aerial photography, with the final accounting of the amount of habitat disturbed during Project construction. This shall be the basis for the final number of acres required to be acquired.

RAVEN MANAGEMENT PLAN AND FEE

BIO-13 The Project owner shall implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of the CMP, in consultation with USFWS and CDFG. The draft Common Raven Monitoring, Management, and Control Plan submitted by the Applicant (AECOM 2010a, Attachment DR-BIO-57) shall provide the basis for the final Raven Plan, subject to review, revisions and approval from the CPM, CDFG and USFWS. The Raven Plan shall include but not be limited to a program to monitor raven presence in the Project vicinity, determine if raven numbers are increasing, and to implement raven control measures as needed based on that monitoring. The purpose of the plan is to avoid any Project-related increases in raven numbers during construction, operation, and decommissioning. In addition, the Project owner shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below.

1. The Raven Plan shall:

    a. Identify conditions associated with the Project that might provide raven subsidies or attractants;

b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;

c. Describe control practices for ravens;

d. Establish thresholds that would trigger implementation of control practices;

e. Address monitoring and nest removal during construction and for the life of the Project, and;

f. Discuss reporting requirements.

2. USFWS Regional Raven Management Program. The Project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The one-time fee shall be as described by the USFWS in the *Renewable Energy Development and Common Raven Predation on the Desert Tortoise – Summary, dated May 2010* (USFWS 2010a) and the Cost Allocation Methodology for Implementation of the Regional Raven Management Plan, dated July 9, 2010) or more current guidance as provided by USFWS or CDFG (USFWS 2010b).

Verification: No less than 10 days prior to the start of any Project-related ground disturbance activities, the Project owner shall provide the CPM, USFWS, and CDFG with the final version of a Raven Plan. All modifications to the approved Raven Plan shall be made only with approval of the CPM in consultation with USFWS and CDFG.

No less than 10 days prior to the start of any Project-related ground disturbance activities for each phase of Project construction as described in **BIO-29**, the Project owner shall provide documentation to the CPM, CDFG and USFWS that the one-time fee for the USFWS Regional Raven Management Program of has been deposited to the REAT-NFWS subaccount for the Project. Payment of the fees may be phased as described in **BIO-29 – Table 3**.

Within 30 days after completion of Project construction, the Project owner shall provide to the CPM for review and approval, a written report identifying which items of the Raven 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.

As part of the annual compliance report, each year following construction the Designated Biologist shall provide a report to the CPM that includes: a summary of the results of raven management and control activities for the year; a discussion of whether raven control and management goals for the year were met; and recommendations for raven management activities for the upcoming year.

WEED MANAGEMENT PLAN

BIO-14 The Project owner shall implement a Weed Management Plan (Plan) that meets the approval of the CPM. The objective of the Plan shall be to prevent the introduction of any new weeds and the spread of existing weeds as a result of Project construction, operation, and decommissioning. The Draft Weed Management Plan, submitted by the Applicant (AECOM 2010a, Attachment DR-BIO-100), shall provide the basis for the final Plan, subject to review and revisions from the CPM. The Plan shall include the following:

1. **Weed Plan Requirements**. The Project owner shall provide a map to the CPM indicating the location of the Weed Management Area, which shall include all areas within 100 feet of the Project Disturbance Area, access roads, staging and laydown sites, and all other areas subject to temporary disturbance. The Project owner shall provide a Plan for the Weed Management Area includes at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of the Weed Management Areas; map of existing populations of target weeds within 100 feet of the Project Disturbance Area and access roads; weed risk assessment; measures to prevent the introduction and spread of weeds; measures to minimize the risk of unintended harm to wildlife and other plants from weed control activities; monitoring and surveying methods; and reporting requirements. Weed control described in the Plan shall focus on prevention, early detection of new infestations, and early eradication for the life of the Project. Weed control along the Project linears shall be limited to the areas where soils were disturbed during construction. Weed monitoring shall occur a minimum of once per year during the early spring months (March-April) to detect seedlings before they set seed. The focus of the Plan shall be on avoiding the introduction of new invasive weeds or the spread of highly invasive species, such as Sahara mustard. Non-native species with low ecological risk, or that are very widespread, such as Mediterranean grass, shall be noted but control shall not be required. When detected, infestations of high priority species shall be eradicated immediately.

2. **Avoidance and Treatment of Dense Weed Populations**. The Plan shall include a requirement to flag and avoid dense populations of the most invasive non-native weeds during any Project-related construction operation in or adjacent to infestations. If these areas cannot be avoided, they shall be pre-treated by one of the following methods: a) treating the infested areas in the season prior to construction by removing and properly disposing of seed heads by hand, prior to maturity, or spraying the new crop of plants that emerge in early spring, the season prior to construction,

to reduce the viable seed contained in the soil, or b) removing and disposing the upper 2 inches of soil and disposing it offsite at a sanitary landfill or other site approved by the County Agricultural Commissioner , or burying the infested soil, e.g., under the solar facility or in a pit, and covering the infested soil with at least three feet of uncontaminated soil.

3. **Cleaning Vehicles and Equipment**. The Plan shall include specifications and requirements for the cleaning and removal of weed seed and weed plant parts from vehicles and equipment involved in Project-related construction and operation. Vehicles and equipment working in weed-infested areas (including previous job sites) shall be required to clean the equipment tires, tracks, and undercarriage *before* entering the Project area and before moving to infested areas of the Project Disturbance Area to uninfested areas. Cleaning shall be conducted on all track and bucket/blade components to adequately remove all visible dirt and plant debris. Cleaning using hand tools, such as brushes, brooms, rakes, or shovels, is preferred. If water must be used, the water/slurry shall be contained to prevent seeds and plant parts from washing into adjacent habitat.

4. **Safe Use of Herbicides**. The final Plan shall include detailed specifications for avoiding herbicide and soil stabilizer drift, and shall include a list of herbicides and soil stabilizers that will be used on the Project with manufacturer's guidance on appropriate use. The Plan shall indicate where the herbicides will be used, and what techniques will be used to avoid chemical drift or residual toxicity to special-status species and their pollinators, and consistent with the Nature Conservancy guidelines and the criteria under #2, below. Only weed control measures for target weeds with a demonstrated record of success shall be used, based on the best available information from sources such as The Nature Conservancy's The Global Invasive Species Team, California Invasive Plant Council: http://www.cal-ipc.org/ip/management/plant_profiles/index.php, and the California Department of Food & Agriculture Encycloweedia: http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_hp.htm.

5. The methods for weed control described in the final Plan shall meet the following criteria:

   a. <u>Manual</u>: Well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.

   b. <u>Chemical</u>: Herbicides known to have residual toxicity, such as pre-emergents and pellets, shall not be used in natural

areas or within the engineered channels. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack and squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations (see Nature Conservancy guidelines described above);

c. Biological: Biological methods may be used subject to review and approval by CDFG and USFWS and only if approved for such use by CDFA, and are either locally native species or have no demonstrated threat of naturalizing or hybridizing with native species;

d. Mechanical: Disking, tilling, and mechanical mowers or other heavy equipment shall not be employed in natural areas but hand weed trimmers (electric or gas-powered) may be used. Mechanical trimmers shall not be used during periods of high fire risk and shall only be used with implementation of fire prevention measures.

Verification: No less than 10 days prior to start of any Project-related ground disturbance activities, the Project owner shall provide the CPM with the final version of a Weed Management Plan that has been reviewed by BLM and Energy Commission staff. Modifications to the approved Weed Control Plan shall be made only with approval from the CPM in consultation with BLM.

Within 30 days after completion of Project construction, the Project owner shall provide to the CPM for review and approval, a written report identifying which items of the 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.

As part of the Annual Compliance Report, each year following construction the Designated Biologist shall provide a report to the CPM and BLM that includes: a summary of the results of noxious weeds surveys and management activities for the year; a discussion of whether weed management goals for the year were met; and recommendations for weed management activities for the upcoming year.

PRE-CONSTRUCTION NEST SURVEYS AND AVOIDANCE MEASURES

BIO-15 Pre-construction nest surveys shall be conducted if construction activities would occur from February 1 through July 31. The Designated Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). The goal of the nesting surveys shall be to identify the general location of the nest sites, sufficient to establish a protective buffer zone around

the potential nest site, and need not include identification of the precise nest locations. Surveyors performing nest surveys shall not concurrently be conducting desert tortoise surveys. The bird surveyors shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat in areas that could be disturbed by each phase of construction, as described in **BIO-29** (Phasing). Surveys shall also include areas within 500 feet of the boundaries of the active construction areas (including linear facilities);
2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall 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;
3. If active nests or suspected active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM; and
4. The Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, 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 during the nesting season, the Project owner shall provide 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 or suspected active nests are detected during the survey, the report shall include a map or aerial photo identifying the location or suspected location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest(s) that would be avoided during Project construction.

Each year during construction as part of the annual compliance report a follow-up report shall be provided to the CPM, BLM, CDFG, and USFWS describing the success of the buffer zones in preventing disturbance to nesting activity and a brief description of the outcome of the nesting effort (for example, whether young were successfully fledged from the nest or if the nest failed).

AVIAN PROTECTION PLAN

BIO-16 The Project owner shall prepare and implement an Avian Protection Plan to monitor the death and injury of birds from collisions with facility features such as transmission lines, reflective mirror-like surfaces and from heat, and bright light from concentrating sunlight. The monitoring data shall be used to inform an adaptive management program that would avoid and minimize Project-related avian impacts. The study design shall be approved by the CPM in consultation with BLM, CDFG and USFWS, and shall be consistent with guidance from the USFWS on development of avian and bat protection plans (USFWS 2010c). The monitoring and adaptive management measures described in the Avian Protection Plan shall be incorporated into the Project's BRMIMP and implemented. The Avian Protection Plan shall include detailed specifications on data and carcass collection protocol and a rationale justifying the proposed schedule of carcass searches. The plan shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias.

Verification: At least 30 days prior to the start of commercial operation of any of the power plant units the Project owner shall submit to the CPM, USFWS, and CDFG a final Avian Protection Plan. Modifications to the Avian Protection Plan shall be made only after approval from the CPM.

For one year following the beginning of power plant operation the Designated Biologist shall submit quarterly reports to the CPM, BLM, CDFG, and USFWS describing the dates, durations, and results of monitoring. The quarterly reports shall provide a detailed description of any Project-related bird deaths or injuries detected during the monitoring study or at any other time, and describe adaptive management measures implemented to avoid or minimize deaths or injuries. Following the completion of the fourth quarter of monitoring the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any Project-related bird fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed.

The Annual Report shall be provided to the CPM, BLM, CDFG, and USFWS. Quarterly reporting shall continue until the CPM, in consultation with CDFG and USFWS determine whether more years of monitoring are needed, and whether mitigation and adaptive management measures are necessary.

AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-17 To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys to facilitate passive relocation. Surveys shall be conducted as described below:

1. Biological Monitors shall perform pre-construction surveys for badger and kit fox dens in the Project disturbance area and a 20-foot buffer beyond the Project disturbance area, including utility corridors and access roads. If dens are detected each den shall be classified as inactive, potentially active, or definitely active. Surveys may be concurrent with desert tortoise surveys.
2. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox.
3. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.
4. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.
5. 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. BLM approval may be required prior to release of badgers on public lands.

Verification: The Project owner shall submit a report to the CPM, BLM and CDFG within 30 days of completion of badger and kit fox surveys. The report shall describe survey methods, results, impact avoidance and minimization measures implemented, and the results of those measures.

BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION, AND COMPENSATION MEASURES

BIO-18 The Project owner shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:

1. Pre-Construction Surveys. The Designated Biologist or Biological Monitor shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to initiation of construction activities. Surveys shall be focused exclusively on detecting burrowing owls, and shall be conducted from two hours before sunset to 1 hour after or from 1 hour before to 2 hours after sunrise. The survey area shall include the Project Disturbance Area and surrounding 500 foot survey buffer for each phase of construction in accordance with **BIO-29** (phasing).

2. Implement Burrowing Owl Mitigation Plan. The Project owner shall implement measures described in the final Burrowing Owl Mitigation Plan. The final Burrowing Owl Mitigation Plan shall be approved by the CPM, in consultation with BLM, USFWS and CDFG, and shall:

   a. identify suitable sites within 1 mile of the Project Disturbance Areas for creation or enhancement of burrows prior to passive relocation efforts;

   b. provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl;

   c. provide detailed methods and guidance for passive relocation of burrowing owls occurring within the Project Disturbance Area; and

   d. describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where burrowing owls were relocated from, and provide a reporting plan.

3. Implement Avoidance Measures. If an active burrowing owl burrow is detected within 500 feet from the Project Disturbance Area the following avoidance and minimization measures shall be implemented:

   a. Establish Non-Disturbance Buffer. Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all Project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1 through January 31). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

   b. Monitoring: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 – August 31) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.

4. Acquire Burrowing Owl Habitat. The Project owner shall acquire, in fee or in easement land suitable to support a resident population of burrowing owls and shall provide funding for the enhancement and long-term management of these compensation lands. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization

dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat.

a. Criteria for Burrowing Owl Mitigation Lands. The terms and conditions of this acquisition or easement shall be as described in **BIO-12** [Desert Tortoise Compensatory Mitigation], with the additional criteria to include: 1) mitigation land per **BIO-29 - Table 2** that must provide suitable habitat for burrowing owls, and 2) the acquisition lands must either currently support burrowing owls or be no farther than 5 miles from an active burrowing owl nesting territory. The burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if these two burrowing owl criteria are met. If the burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the Project owner shall fulfill the requirements described below in this condition.

b. Security. If the burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands the Project owner or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition (see the verification section at the end of this condition). Alternatively, financial assurance can be provided by the Project owner to the CPM and CDFG, according to the measures outlined in **BIO-12**. The amount of the Security shall be as described in **BIO-29 – Table 3** for the proposed Project or any of the Project alternatives. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing Project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with CDFG and the USFWS to ensure funding. The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in **BIO-12**.

Verification: If pre-construction surveys detect burrowing owls within the Project Disturbance Area and relocation of the owls is required, within 30 days of completion of the burrowing owl pre-construction surveys the Project owner shall submit to the CPM, BLM, CDFG, and USFWS a Burrowing Owl Mitigation Plan. The Burrowing Owl Mitigation Plan shall identify suitable areas for construction of burrows and the other passive relocation as described above. As part of the Annual Compliance Report each year following construction for a period of five

years, the Designated Biologist shall provide a report to the CPM, BLM, USFWS and CDFG that describes the results of monitoring and management of the burrowing owl burrow creation or enhancement area(s).

If pre-construction surveys detect burrowing owls within 500 feet of proposed construction activities, at least 10 days prior to the start of any Project-related site disturbance activities the Designated Biologist shall provide to the CPM, BLM, CDFG, and USFWS documentation indicating that non-disturbance buffer fencing has been installed as described above. The Project owner shall report monthly to the CPM, BLM, CDFG and USFWS for the duration of construction on the implementation of burrowing owl avoidance and minimization measures. Within 30 days after completion of construction the Project owner shall provide to the CPM and CDFG a written report identifying how mitigation measures described in the plan have been completed.

No less than 30 days prior to the start of Project ground-disturbing activities the Project owner shall provide the CPM with an approved form of Security in accordance with this condition of certification. Actual Security for acquisition of 78 acres of burrowing owl habitat shall be provided no later than 7 days prior to the beginning of Project ground-disturbing activities.

No fewer than 90 days prior to the land or easement purchase, as determined by the date on the title, the Project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, BLM, and USFWS, for the compensation lands and associated funds.

No later than 18 months from initiation of construction, the Project owner shall provide written verification to the CPM that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.

SPECIAL-STATUS PLANT IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATION

BIO-19 This condition contains the following four sections:

- **Section A: Special-Status Plant Impact Avoidance and Minimization Measures** contains the Best Management Practices and other measures designed to avoid accidental indirect impacts to plants during construction, operation, and closure. The measures are required for special-status plants located outside of the Project Disturbance Area and within 100 feet of the Project Disturbance Area. The same measures shall also be implemented for plants within the Project Disturbance Area that are avoided pursuant to Section C of this condition.
- **Section B: Conduct Late Season Botanical Surveys** describes guidelines for conducting summer-fall 2010 surveys to detect special-status plants that would have been missed during the spring 2010 surveys.

- **Section C: Avoidance Requirements for Special-Status Plants** Detected **in the Summer/Fall 2010 Surveys** outlines the level of on-site avoidance required for any special-status plants detected during the summer-fall surveys, and specifies when off-site mitigation is required..
- **Section D: Off-Site Compensatory Mitigation for Special-Status Plants** describes performance standards for off-site mitigation through acquisition or restoration/enhancement.

"Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the plant site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation. The term "Permanent Project Disturbance Area" refers only to the solar facility; "linears" includes transmission lines, laydown areas, pipelines, and access roads.

The Project owner shall implement the following measures in Section A, B, C, and D to avoid, minimize, and compensate for direct, indirect, and cumulative impacts to special-status plant species:

Section A: Special-Status Plant Impact Avoidance and Minimization Measures

To protect all special-status plants[5][6]located outside of the Project Disturbance Area and within 100 feet of the permitted Project Disturbance Area from accidental and indirect impacts during construction, operation, and closure, the Project owner shall implement the following measures:

1. Designated Botanist. An experienced botanist who meets the qualifications described in Section **B-2** below shall oversee compliance with all special-status plant avoidance, minimization, and compensation measures described in this condition throughout construction and closure. The Designated Botanist shall oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work. During operation of the

[5] This shall include special-status plants found during the fall 2010 surveys and the following species found during the spring 2009-2010 surveys: Harwood's milk-vetch; Harwood's woolly-star; California ditaxis; ribbed cryptantha, and the "Palen Lake atriplex (Andre sp. nov.).

[6] Staff defines special-status plants as described in *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (California Natural Resources Agency, Department of Fish and Game, issued November 24, 2009). "List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not."

Project, the Designated Biologist shall be responsible for protecting special-status plant occurrences within 100 feet of the Project boundaries.

2. Special-Status Plant Impact Avoidance and Minimization Measures. The Project owner shall incorporate all measures for protecting special-status plants in close proximity to the site into the BRMIMP (**BIO-7**). These measures shall include the following elements:

   a. Site Design Modifications: i) Incorporate s modifications to site design or construction techniques to minimize direct and indirect impacts to special-status plants along the Project linears to include: limiting the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and minor adjustments to the alignment of the roads and pipelines within the constraints of the ROW; ii)modify diffusers on engineered channel to ensure discharge into existing small channels that were deprived of flows from diversion into engineered channel to minimize impacts downstream and maintain the natural surface drainage patterns and sediment transport critical to wash-dependent special-status plants; iii) These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.

   b. Establish Environmentally Sensitive Areas (ESAs). Prior to the start of any ground- or vegetation-disturbing activities, the Designated Botanist shall establish ESAs to protect avoided[7] special-status plants located outside of the Project Disturbance Areas and within 100 feet of the boundary of construction. This includes plant occurrences identified during the spring 2009-2010 surveys and the late season 2010 surveys. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall be placed a minimum of 20 feet from the uphill side of the occurrence and 10 feet from the downhill side. Where this is not possible due to construction constraints, other protection measures such as silt-fencing and sediment controls may be employed to protect the occurrences. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from the uphill side of any ESAs. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the

[7] "Avoided" includes plants occurring within 100 feet outside of the Project boundary, and all plants within the Project Disturbance Area (linears or solar facility) that were avoided pursuant to Section C of this condition.

fencing or sediment controls under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be clearly identified (with signage or by mapping on site plans) to ensure that avoided plants are not inadvertently harmed during construction, operation, or closure.

c. Special-Status Plant Worker Environmental Awareness Program (WEAP). The WEAP **(BIO-6)** shall include training components specific to protection of special-status plants as outlined in this condition.

d. Herbicide and Soil Stabilizer Drift Control Measures. Special-status plant occurrences within 100 feet of the Project Disturbance Area, and any occurrences avoided within the Project Disturbance Area[3] shall be protected from herbicide and soil stabilizer drift. The Weed Control Program (**BIO-14**) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by the Nature Conservancy's *The Global Invasive Species Team*[8] , the U.S. Environmental Protection Agency, and the Pesticide Action Network Database[9].

e. Erosion and Sediment Control Measures. Erosion and sediment control measures shall not inadvertently impact special-status plants by using invasive or non-native plants in seed mixes, introducing pest plants through contaminated seed or straw, accidental burial by mulches, etc. These specifications shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under **SOIL&WATER-1**.

f. Locate Staging, Parking, Spoils, and Storage Areas Away from Special-Status Plant Occurrences. Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any ESAs. These specifications shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under **SOIL&WATER-1**.

g. Pre-Construction Seed Collection. For all significant impacts to special-status plants, mitigation shall include seed collection from the affected special-status plants population on-site prior to construction to conserve the germplasm and provide a seed

[8] Hillmer, J. & D. Liedtke. 2003. Safe herbicide handling: a guide for land stewards and volunteer stewards. Ohio Chapter, The Nature Conservancy, Dublin, OH. 20 pp. Online: <http://www.invasive.org/gist/products.html.

[9] Pesticide Action Network of North America. Kegley, S.E., Hill, B.R., Orme S., Choi A.H., PAN Pesticide Database, Pesticide Action Network, North America. San Francisco, CA, 2010 <http://www.pesticideinfo.org>

source for restoration efforts. Seed collection shall follow the guidelines described in Section D.III.3 of this condition.

h. Monitoring and Reporting Requirements. The Designated Botanist, or BM under supervision of the Designated Botanist, shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

Section B: Conduct Late-Season Botanical Surveys

The Project owner shall conduct late-summer/fall botanical surveys for late-season special-status plants prior to start of construction or by the end of 2010, as described below:

1. Survey Timing. Surveys shall be timed to detect: a) summer annuals triggered to germinate by the warm, tropical summer storms (which may occur any time between June and October), and b) fall-blooming perennials that respond to the cooler, later season storms (typically beginning in September or October). For those species that are identified by vegetative characteristics, surveys do not have to be timed for blooming or fruiting. The surveys shall not be timed to coincide with the statistical peak bloom period of the target species but shall instead, if possible, be based on plant phenology and the timing of a significant storm event (e. g., a 10mm or greater rain or multiple storm events of sufficient volume to trigger germination as determined by a qualified botanist.). If possible, surveys shall occur at the appropriate time to capture the characteristics necessary to identify the taxon. Construction is authorized to commence following a 2010 late season survey.

2. Surveyor Qualifications and Training. Surveys shall be conducted by a qualified botanist knowledgeable in the complex biology of the local flora, and consistent with CDFG (2009) and BLM (2009) guidelines for surveyor qualifications. Each surveyor shall be equipped with a GPS unit and record a complete tracklog; these data shall be compiled and submitted along with the Summer-Fall Survey Botanical Report (described below). Prior to the start of surveys, all crew members shall, at a minimum, visit reference sites (where available) and/or review herbarium specimens of all BLM Sensitive plants, CNPS List 1B or 2 (Nature Serve rank S1 and S2) or proposed List 1B or 2 taxa, and any new reported or documented taxa, to obtain a search image. Because the potential for range extensions is unknown, the list of potentially occurring special-status plants shall include all special-status taxa known to occur within the Sonoran Desert region and the eastern portion of the Mojave in California. The list shall also include taxa with bloom seasons that begin in fall and extend into the early spring as many

of these are reported to be easier to detect in fall, following the start of the fall rains.

3. Survey Coverage. The survey coverage or intensity shall be in accordance with BLM Survey Protocols (issued July 2009)[10], which specify that intuitive controlled surveys shall only be accomplished by botanists familiar with the habitats and species that may reasonably be expected to occur in the project area.

4. Pre-Construction Seed Collection. For all significant impacts to special-status plants, mitigation shall include seed collection from the affected special-status plants population on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. Seed collection shall be conducted during the late-season surveys follow the guidelines described in Section D.III.3 of this condition.

5. Documenting Occurrences. If a special-status plant is detected, the full extent of the population onsite shall be recorded using GPS in accordance with BLM survey protocols. Additionally, the extent of the population within one mile of Project boundaries shall be assessed at least qualitatively to facilitate an accurate estimation of the proportion of the population affected by the Project. For populations that are very dense or very large, the population size may be estimated by simple sampling techniques. When populations are very extensive or locally abundant, the surveyor must provide some basis for this assertion and roughly map the extent on a topographic map. All but the smallest populations (e.g., a population occupying less than 100 square feet) shall be recorded as area polygons; the smallest populations may be recorded as point features. All GPS-recorded occurrences shall include: the number of plants, phenology, observed threats (e.g., OHV or invasive exotics), and habitat or community type. The map of occurrences submitted with the final botanical report shall be prepared to ensure consistency with definition of an occurrence by CNDDB, i.e., occurrences found within 0.25 miles of another occurrence of the same taxon, and not separated by significant habitat discontinuities, shall be combined into a single 'occurrence'. The Project owner shall also submit the raw GPS shape files and metadata, and completed CNDDB forms for each 'occurrence' (as defined by CNDDB).

6. Reporting. Raw GPS data, metadata, and CNDDB field forms shall be provided to the CPM and the BLM State Botanist within two weeks of the completion of each survey. If surveys are split into two

[10] Bureau of Land Management (BLM), California State Office. *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species*. Issued July 2009.

or more periods (e.g., a late summer survey and a fall survey), then a summary letter shall be submitted following each survey period. The Final Summer-Fall Botanical Survey Report shall be prepared consistent with CDFG guidelines (CDFG 2009), and BLM 2009 guidelines and shall include all of the following components:

a. the BLM designation, NatureServe Global and State Rank of each species or taxon found (or proposed rank, or CNPS List);

b. the number or percent of the occurrence that will be directly affected, and indirectly affected by changes in drainage patterns or altered geomorphic processes;

c. the habitat or plant community that supports the occurrence and the total acres of that habitat or community type that occurs in the Project Disturbance Area;

d. an indication of whether the occurrence has any local or regional significance (e.g., if it exhibits any unusual morphology, occurs at the periphery of its range in California, represents a significant range extension or disjunct occurrence, or occurs in an atypical habitat or substrate);

e. a completed CNDDB field form for every occurrence (occurrences of the same species within one-quarter mile or less of each other combined as one occurrence, consistent with CNDDB methodology), and

f. two maps: one that depicts the raw GPS data (as collected in the field) on a topographic base map with Project features; and a second map that follows the CNDDB protocol for occurrence mapping.

Section C: Avoidance Requirements for Special-Status Plants Detected in the Summer/Fall 2010 Surveys

The Project owner shall apply the following avoidance and mitigation standards for impacts to late blooming special-status plants that might be detected during late summer/fall season surveys. The Project owner shall immediately notify the CDFG, USFWS, BLM State Botanist, and the CPM if any State- or Federal-listed species or BLM Sensitive species are detected. Avoidance and/or the off-site mitigation measures described in Section D below would reduce impacts to these special-status plant species to less-than-significant levels. Plants shall be considered impacted if they are within the Project footprint, or if they would be affected by Project-related hydrologic changes or changes to the local sand transport system Downstream/ downwind impacts from altered hydrology or geomorphic processes shall be considered direct impacts.

1. Mitigation for CNDDB Rank 1 Plants (Critically Imperiled). If late blooming species with a CNDDB rank of 1[11] are detected within the Project Disturbance Area, complete avoidance is mandatory along the linears and within construction laydown areas. The Project owner shall limit the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads, and other construction or design modifications as necessary to achieve avoidance of any Rank 1 plants detected.

   If late-season Rank 1 plants are detected on the solar facility, the Project owner shall avoid all plants around the perimeter[12] of the facility as necessary to achieve 75 percent avoidance of the local population of the affected species. The local population shall be measured by the number of individuals occurring on the Project Site and within the immediate watershed of the Project for wash dependent-species or species of unknown dispersal mechanism, or within the local sand transport corridor for wind dispersed species. Measurement of percent avoidance shall be based on population for perennials and on habitat for annuals (habitat containing the species' micro-habitat preferences, such as "fine silts and moist depressions"). Avoidance within the central portion of the solar facility is not recommended because it would create fragmented conditions that would not sustain persistence of the affected species. For all portions of the local population not avoided, the Project owner shall implement off-site mitigation at a ratio of 3:1. The off-site mitigation may include land acquisition or implementation of a restoration/enhancement program for the species, and shall meet the performance standards described in section D of this Condition. The Applicant must demonstrate, subject to review and approval by the CPM, that the impacts, after mitigation, will not cause a loss of viability[13] for that species. The

[11] The CNDDB Rank is provided in the California Natural Diversity Database (CNDDB). Plants with a Rank of 1 are "Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state."

[12] The inside "perimeter" is used here to describe the distance or length equal to two troughs.

[13] A "viable" species is one consisting of self-sustaining and interacting populations that are well-distributed throughout the species' range. "Self-sustaining populations" are those that are sufficiently abundant and have sufficient diversity to display the array of life history strategies and forms to provide for their long-term persistence and adaptability over time. The definition of the term "well-distributed" can vary based on current, historic, and potential population and habitat conditions. Maintaining viability is a means of ensuring, as much as possible, that a species will not go extinct in the foreseeable future. Because species and their environments are dynamic, there is not a single population size above which a species is viable and below which it will become extinct. Viability is best expressed as a level of risk of extinction.

Project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). The content of the Plan and definitions shall be as described above in subsection C.3, below.

2. Mitigation for CNDDB Rank 2[14] Plants (Imperiled). If late-season CNDDB Rank 2 species are detected within the Project Disturbance Area avoidance is mandatory along the linears and construction laydown areas. The Project owner shall limit the width of the work area, adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads, and other construction or design modifications as necessary to achieve avoidance of any Rank 2 plants detected[15].

   If late-season Rank 2 plants are detected on the solar facility, the Project owner shall implement off-site mitigation, at a ratio of 2:1, for any impacts exceeding 25 percent of the local population. The off-site mitigation may include land acquisition or implementation of a restoration/enhancement program for the species, and shall meet the performance standards described in section D of this Condition. The Project owner must demonstrate, subject to review and approval by the CPM, that the impacts, after mitigation, will not cause a loss of viability for that species. The Project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). The content of the Plan and definitions shall be as described above in subsection C.3, below.

3. Mitigation for CNDDB Rank 3[16] Plants (Vulnerable). If CNDDB Rank 3 plants are detected (which constitutes most CNPS List 4 plants), mitigation is not required unless the occurrence has local or regional significance, in which case the plant occurrence shall be treated as a CNDDB Rank 2 plant; avoidance and mitigation would be as described above under C.2. A plant occurrence would be considered to have local or regional significance if:

[14] CNDDB Rank 2 plants are "Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state".

[15] The CNDDB Rank 2 plants California ditaxis was detected along the linears within the Project Disturbance Area (Solar Millenium 2010p). Staff concluded the impact was significant and all terms and conditions of Section C.2 shall be implemented. Staff concluded that the direct impacts to Harwood's milk-vetch were minor and no compensatory mitigation is required beyond the avoidance and minimization measures described in Section A of this condition.

[16] CNDDB Rank 3 plants are "Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

a. It occurs at the outermost periphery of its range in California;

b. It occurs in an atypical habitat, region, or elevation for the taxon that suggests that the occurrence may have genetic significance (e.g., that may increase its ability to survive future threats), or;

c. It exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or sub-species.

4. Prepare Special-Status Plant Mitigation Plan. If the project will impact any CNDDB Rank 1 or Rank 2 plants, or Rank 3 plants of local or regional significance, or new taxa, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). Compensatory mitigation, as described in Section D of this condition, and at a mitigation ratio of 3:1 for Rank 1 plants, and 2:1 for Rank 2 plants and Rank 1 plants of local or regional significance, and new taxa. The Plan shall include, at a minimum, the following components and definitions:

   a. A description of the occurrences of the affected special-status species, ecological characteristics such as soil, hydrology, and other micro-habitat requirements, ecosystem processes required for maintenance of the species or its habitat, reproduction and dispersal mechanisms, pollinators, local distribution, a description of the extent of the population off-site, the percentage of the local population affected, and a description of how these occurrences would be impacted by the Project, including direct and indirect effects. Occurrences shall be considered impacted if they are within the Project footprint, and if they would be affected by Project-related hydrologic changes or changes to the local sand transport system.

   b. A description of the avoidance and minimization measures that would achieve complete avoidance of occurrences on the Project linears and construction laydown areas. If avoidance is also required on the solar facility (Rank 1 species), provide a description of the measures that would be implemented to avoid or minimize impacts to occurrences on the solar facility. “Avoidance” shall include protection of the ecosystem processes essential for maintenance of the protected plant occurrence, and protection of the seed bank. Isolated ‘islands’ of protected plants disconnected by the Project from natural fluvial, aeolian (wind), or other processes essential for maintenance of the species, shall not be considered avoidance.

   c. If off-site mitigation is also required, pursuant to C.1 –C.3 above, the Plan shall include a description of the proposed mitigation (acquisition or restoration/enhancement) and

demonstrate how the mitigation will meet the performance standards described in Section D of this condition.

For CNDDB Rank 1 plants that cannot be avoided (i.e., plants located in the central portion of the solar facility), the Plan must demonstrate that the impacts (after mitigation) will not cause a loss of viability for that species. The assessment of viability shall include: *i*) current literature compilation and review on the affected species, it's documented and reported occurrences, range and distribution, habitat, and the ecological conditions needed to support it; *ii)* consultation with scientists and others with expertise and local knowledge of the species to gather unpublished data and other information to supplement the literature review findings, and (if available) *iii*) information on species' habitat relationships, demographics, genetics, and risk factors.

Section D: Off-Site Compensatory Mitigation for Special-Status Plants

Where compensatory mitigation is required under the terms of Section C, above, the Project owner shall mitigate Project impacts to special-status plant occurrences with compensatory mitigation. Compensatory mitigation shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of populations of the target species, and shall meet the performance standards for mitigation described below. In the event that no opportunities for acquisition or restoration/enhancement exist, the Project owner can fund a species distribution study designed to promote the future preservation, protection or recovery of the species. Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants, with three acres of habitat acquired or restored/enhanced for every acre of habitat occupied by the special status plant that will be disturbed by the Project Disturbance Area (for example if the area occupied by the special status plant collectively measured is ¼ acre than the compensatory mitigation will be ¾ of an acre). The mitigation ratio for Rank 2 plants shall be 2:1. So, for the example above, the mitigation ratio would be one-half acre for the Rank 2 plants.

The Project owner shall provide funding for the acquisition and/or restoration/enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The actual costs to comply with this condition will vary depending on the Project Disturbance Area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) report, and other transactional costs related to the use of compensatory mitigation.

The Project owner shall comply with other related requirements in this condition:

I. Compensatory Mitigation by Acquisition: The requirements for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands include all of the following:

1. Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:

   a. Occupied Habitat, No Habitat Threats. The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).

   b. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/Restoration Plan as described in Section D.II, below.

   c. Unoccupied but Adjacent. The Project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The Project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species.

2. Review and Approval of Compensation Lands Prior to Acquisition. The Project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the CPM.

3. Management Plan. The Project owner or approved third party shall prepare a management plan for the compensation lands in

consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the CPM.

4. Integrating Special-Status Plant Mitigation with Other Mitigation lands. If all or any portion of the acquired Desert Tortoise, Waters of the State, or other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.

5. Compensation Lands Acquisition Requirements. The Project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM, has approved the proposed compensation lands:

   a. Preliminary Report. The Project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

   b. Title/Conveyance. The Project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the CPM. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the CPM. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Project owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.

c. Initial Protection and Habitat Improvement. The Project owner shall fund activities that the CPM requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities would use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, but actual costs will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the CPM in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

d. Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM before it can be used to establish funding levels or management activities for the compensation lands.

e. Long-term Maintenance and Management Funding. The Project owner shall deposit in NFWF's REAT Account a capital long-term maintenance and management fee in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands.
The CPM, in consultation with CDFG, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision.

Interest, Principal, and Pooling of Funds. The Project owner shall ensure that an agreement is in place with the long-term maintenance and management fund (endowment) holder/manager to ensure the following requirements are met:

i. Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the CPM and is designed to protect or improve the habitat values of the compensation lands.

ii. Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the CPM or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.

iii. Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for this Project must be tracked and reported individually to the CPM.

f. Other Expenses. In addition to the costs listed above, the Project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

g. Mitigation Security. The Project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing Project activities. Financial assurances shall be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security (“Security”) approved by the CPM. The amount

of the Security shall use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is significantly impacted by the project. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the CPM, the Project owner shall obtain the CPM's approval of the form of the Security. The CPM may draw on the Security if the CPM determines the Project owner has failed to comply with the requirements specified in this condition. The CPM may use money from the Security solely for implementation of the requirements of this condition. The CPM's use of the Security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition, and the Project owner remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the Project owner in whole or in part upon successful completion of the associated requirements in this condition.

h. NFWF REAT Account. The Project owner may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the Project owner, the Project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the

Applicant, the remaining balance shall be returned to the Project owner.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM, in consultation with CDFG, BLM and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the start of ground disturbance.

II. Compensatory Mitigation by Habitat Enhancement/Restoration: As an alternative or adjunct to land acquisition for compensatory mitigation the Project owner may undertake habitat enhancement or restoration for the target special-status plant species. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio for Rank 1 plants and 2:1 for Rank 2 plants, with improvements applied to three acres, or two acres, respectively, of habitat for every acre special-status plant habitat directly or indirectly disturbed by the Project Disturbance Area (for example if the area occupied by the special status plant collectively measured is 1/4 acre than the improvements would be applied to an area equal to 3/4 of an acre at a 3:1 ratio, or one-half acre at a 2:1 ratio). Examples of suitable enhancement projects include but are not limited to the following: i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); ii) control of invasive non-native plants that infest or pose an immediate threat to an occurrence; iii) exclude grazing by wild burros or livestock from an occurrence; or iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.

If the Project owner elects to undertake a habitat enhancement project for mitigation, the project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence that is currently assessed, based on the NatureServe threat ranking system[17] with one of the following threat

[17] Master, L., D. Faber-Langendoen, R. Bittman, G. A., Hammerson, B. Heidel, J. Nichols, L. Ramsay, and A. Tomaino. 2009. *NatureServe Conservation Status Assessments: Factors for Assessing Extinction Risk.* NatureServe, Arlington, VA. Online: http://www.natureserve.org/publications/ConsStatusAssess_StatusFactors.pdf, "Threats". See

ranks: a) long-term decline >30%; b) an immediate threat that affects >30% of the population, or c) has an overall threat impact that is High to Very High. “Rescue” would be considered successful if it achieves an improvement in the occurrence trend to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).

If the Project owner elects to undertake a habitat enhancement project for mitigation, they shall submit a Habitat Enhancement/Restoration Plan to the CPM for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is directly or indirectly impacted by the project. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the CPM. The Habitat Enhancement/Restoration Plan shall include each of the following:

1. Goals and Objectives. Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The objective of the proposed habitat enhancement plan shall include restoration of a target special-status plant occurrence that is currently threatened with a long-term decline. The proposed enhancement plan shall achieve an improvement in the occurrence trend to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).
2. Historical Conditions. Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
3. Site Characteristics. Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species.

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also: Morse, L.E., J.M. Randall, N. Benton, R. Hiebert, and S. Lu. 2004. An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity. Version 1. NatureServe, Arlington, Virginia. Online: http://www.natureserve.org/publications/pubs/invasiveSpecies.pdf

4. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.
5. Methods. Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. Budget. Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria.
7. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards for rescue of a threatened occurrence are met. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
8. Reporting Program. The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.
9. Contingency Plan. Describe the contingency plan for failure to meet annual goals.
10. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.

III. Contingency Measures

1. Preservation of the Germplasm of Affected Special-Status Plants. For all significant impacts to special-status plants, mitigation shall also include seed collection from the affected special-status plants population on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the

Project owner. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the CPM.

2. Compensatory Mitigation by Conducting or Contributing to a Management Plan for the Affected Species. Subject to approval of the CPM, as a contingency measure in the event there are no opportunities for mitigation through acquisition or restoration/enhancement to meet the obligations for off-site mitigation as described in Section C.1-3 of this condition, , a Management Plan for the affected special-status plant species may be conducted or funded. The goal of the Management Plan is to devise a science-based, region-wide strategy to ensure the long-term viability of the affected species, and to acquire, protect, and restore existing populations and the habitat that supports them. The information gathered shall be used to develop conservation approaches to address the identified risk factors. These approaches include land allocations, restoration needs, identifying and preserving important refugia to facilitate species dispersal and maintain biodiversity in the face of climate change, recommending Best Management Practices or other measures that could be used to minimize threats, and identifying planning needs at the regional level. The results of the study would also be provided to the resource agencies, conservation organizations, and academic institutions, as well as the state's Natural Diversity Database and Consortium of California Herbaria.

3. Under this contingency measure, the Project owner shall acquire all available information on the distribution, status or health of known occurrences, ecological requirements, and ownership and management opportunities of the affected special-status plant species and other special status plants known to occur in the Chuckwalla Valley. Some of these late blooming species are only known from a few viable occurrences in California, and historic occurrences that have not been re-located or surveyed since they were first documented. At a minimum, the study shall include the following:

    a. Occurrence and Life History Review. The Study shall include an evaluation of all documented, historical and reported localities for the affected species, and a review of current information on the species life history. This would include a review of the CNDDB database, records from regional and national herbaria, literature review, consultation with U.C. Riverside, San Diego Natural History Museum, and other educational institutions or natural heritage organizations in California, Arizona, and

Nevada, etc.), other biotechnical survey reports from the region, and information from regional botanical experts.

b. Conduct Site Visits to Documented and Reported Localities. Documented and reported occurrences would be evaluated in the field during the appropriate time of the year for each late blooming species. If located, these occurrences would be evaluated for population size (area and quantity), population trend, ecological characteristics, soils, habitat quality, potential threats, degree and immediacy of threats, ownership and management opportunities. GPS location data would also be collected during these site visits.

c. Survey Surrounding Areas. Areas surrounding the occurrences that contain habitat suitable to support the affected species shall be surveyed to determine the full extent of its range and distribution. If additional populations are found, collect data (GPS and assessment) on these additional populations consistent with III.2 above.

d. Prepare Report on Status, Distribution, and Management Needs. A report shall be prepared that contains the results of the surveys and assessment. The report shall contain the following components: a) Range and Distribution (including maps and GPS data); b) Abundance and Population Trends; c) Life History; d) Habitat Necessary for Survival; d) Factors Affecting Ability to Survive and Reproduce; e) Degree and Immediacy of Threat; f) Ownership and Management Opportunities for Protection or Recovery; g) Sources of Information, and g) Conclusions. The conclusions shall contain an explanation of whether the species' survival is threatened by any of the following factors: i) present or threatened modification or destruction of its habitat; ii) competition; iii) disease; iv) other natural occurrences (such as climate change) or human-related activities. This valuable information will provide a better understanding of the ecological factors driving the distribution of these species, and will identify opportunities for mitigation and management opportunities for recovery. All data from this study will be submitted for incorporation into the CNDDB system and the study report will be made available to resource agencies, and conservation groups, and other interested parties.

e. The cost to implement or fund the study shall be no greater than the cost for acquisition, enhancement, and long-term management of compensatory mitigation lands based on the specifications and standards for acquisition or restoration/enhancement described above under D.I and D.II.

Verification: The Special-Status Plant Impact Avoidance and Minimization Measures shall be incorporated into the BRMIMP as required under Condition of Certification **BIO-7.**

The Project owner shall notify the CPM and the BLM State Botanist no less than 14 days prior to the start of late-season surveys and provide a target list of late season special-status plants that will be considered. Concurrently, the Project owner shall coordinate with BLM to obtain a permit for seed collection. Seed collection is required for all special-status plants located within the Project Disturbance Area and shall be conducted according to the specifications in Section D.III.1 of this condition and with all terms and conditions of the BLM permit.

Raw GPS data, metadata, and CNDDB field forms shall be submitted to the CPM within two weeks of the completion of each survey. A preliminary summary of results for the late summer/fall botanical surveys, prepared according to guidelines in Section B of this condition, shall also be submitted to the CPM and BLM's State Botanist within two weeks following the completion of the surveys. If surveys are split into more than one period, then a summary letter shall be submitted following each survey period. The Final Summer-Fall Botanical Survey Report, GIS shape files and metadata shall be submitted to the BLM State Botanist and the CPM no less than 30 days prior to the start of ground-disturbing activities. The Final Report shall include a detailed accounting of the acreage of Project impacts to special-status plant occurrences.

For any special-status plant species located within the Project Disturbance Area, the Project owner shall submit to the CPM to less than 30 days prior to the start of ground-disturbing activities proof, in the form of a letter or receipt, of the seed or other propagules collected pursuant to Section D.III #1 of this Condition.

The draft conceptual Special-Status Plant Mitigation Plan, as described under Section C.4 of this condition, shall be submitted to the CPM for review and approval no less than 30 days prior to the start of ground-disturbing activities.

The Project owner shall immediately provide written notification to the CPM, CDFG, USFWS, and BLM State Botanist if it detects a State- or Federal-Listed Species, or BLM Sensitive Species at any time during its late summer/fall botanical surveys or at any time thereafter through the life of the Project, including conclusion of Project decommissioning.

No less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit grading plans and construction drawings to the CPM which depict the location of Environmentally Sensitive Areas and the Avoidance and Minimization Measures contained in Section A of this Condition, and under Section C.1-3.

If compensatory mitigation is required, pursuant to Section C.1-3, no less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit to the CPM the form of Security adequate to acquire compensatory mitigation lands and/or undertake habitat enhancement or restoration activities,

as described in this condition. Actual Security shall be provided 7 days prior to start of ground-disturbing activities.

No fewer than 90 days prior to acquisition of compensatory mitigation lands, the Project owner shall submit a formal acquisition proposal and draft Management Plan for the proposed lands to the CPM, with copies to CDFG, USFWS, and BLM, describing the parcels intended for purchase and shall obtain approval from the CPM prior to the acquisition. No fewer than 90 days prior to acquisition of compensatory mitigation lands, the Project owner shall submit to the CPM and obtain CPM approval of any agreements to delegate land acquisition to an approved third party, or to manage compensation lands; such agreement shall be executed and implemented within 18 months of the start of ground disturbance.

No fewer than 30 days after acquisition of the property the Project owner shall deposit the funds required by Section I e above (long term management and maintenance fee) and provide proof of the deposit to the CPM.

The Project owner or an approved third party shall complete the acquisition and all required transfers of the compensation lands, and provide written verification to the CPM of such completion no later than 18 months after the start of Project ground-disturbing activities. If NFWF or another approved third party is being used for the acquisition, the Project owner shall ensure that funds needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline. If habitat enhancement is proposed, no later than six months following the start of ground-disturbing activities, the Project owner shall obtain CPM approval of the final Habitat Enhancement/Restoration Plan, prepared in accordance with Section D, and submit to the CPM or a third party approved by the CPM Security adequate for long-term implementation and monitoring of the Habitat Enhancement/Restoration Plan.

Enhancement/restoration activities shall be initiated no later than 12 months from the start of construction. The implementation phase of the enhancement project shall be completed within five years of initiation. Until completion of the five-year implementation portion of the enhancement action, a report shall be prepared and submitted as part of the Annual Compliance Report. This report shall provide, at a minimum: a summary of activities for the preceding year and a summary of activities for the following year; quantitative measurements of the Project's progress in meeting the enhancement project success criteria; detailed description of remedial actions taken or proposed; and contact information for the responsible parties.

If a contingency measure is required, as described in Section D.III of this condition, the Project owner shall submit commence no later than six months following the start of ground-disturbing activities. The draft study shall be submitted to the CPM and BLM State Botanist for review and approval no more than two years following the start of ground-disturbing activities. The final study shall be submitted no more than 30 months following the start of ground-disturbing activities.

If a Distribution Study is implemented as contingency mitigation, the study shall be initiated no later than 6 months from the start of construction. The implementation phase of the study shall be completed within two years of the start of construction.

Within 18 months of ground-disturbing activities, the Project owner shall transfer to the CPM or an approved third party the difference between the Security paid and the actual costs of (1) acquiring compensatory mitigation lands, completing initial protection and habitat improvement , and funding the long-term maintenance and management of compensatory mitigation lands; and/or (2) implementing and providing for the long-term protection and monitoring of habitat enhancement or restoration activities.

Implementation of the special-status plant impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval, in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all avoided special-status plants to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, completed CNDDB field forms for each avoided occurrence on-site and within 100 feet of the Project boundary off-site, and description of the remedial action, if warranted and planned for the upcoming year. The completed forms shall include an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends.

SAND DUNE/MOJAVE FRINGE-TOED LIZARD MITIGATION

BIO-20 To mitigate for habitat loss and direct impacts to Mojave fringe-toed lizards the Project owner shall provide compensatory mitigation, which may include compensation lands purchased in fee or in easement in whole or in part, at the following ratios:

- 3:1 mitigation for direct impacts to stabilized and partially stabilized sand dunes (per **BIO-29 – Table 2** or final acreage impacted by the Project footprint);
- 1:1 mitigation for direct impacts non-dune Mojave fringe-toed lizard habitat (per **BIO-29 – Table 2** or final acreage impacted by the Project footprint); and
- 0.5:1 mitigation for indirect impacts to stabilized and partially stabilized sand dunes (per **BIO-29 – Table 2** or final acreage impacted by the Project footprint).

If compensation lands are acquired, the Project owner shall provide funding for the acquisition in fee title or in easement, initial habitat

improvements, and long-term maintenance and management of the compensation lands. In addition, the compensation lands must include, at a minimum, the number acres of stabilized and partially stabilized sand dune habitat shown in **BIO-29 Table 2**.

1. Criteria for Compensation Lands: The compensation lands selected for acquisition shall:

    a. Provide suitable habitat for Mojave fringe-toed lizards, and, aside from the minimum amount of stabilized and partially stabilized sand dunes, may include stabilized and partially stabilized desert dunes, sand drifts over playas, or Sonoran creosote bush scrub;

    b. Be within the Palen or Chuckwalla valleys with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat;

    c. Be prioritized near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

    d. Provide quality habitat for Mojave fringe-toed lizard that has the capacity to regenerate naturally when disturbances are removed;

    e. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;

    f. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

    g. Not contain hazardous wastes that cannot be removed to the extent the site is suitable for habitat;

    h. Have water and mineral rights included as part of the acquisition, unless the CPM, in consultation with CDFG, BLM and USFWS, agrees in writing to the acceptability of the land; and

    i. Be on land for which long-term management is feasible.

2. Security for Implementation of Mitigation: The Project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of Mojave fringe-toed lizard habitat as described in this condition. These funds shall be used solely for implementation of the measures associated with the Project.

Financial assurance can be provided to the CPM according to the measures outlined in **BIO-12**, and within the time period specified for this assurance (see the verification section at the end of this condition). The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in **BIO-12**, but current estimates are included in **Biological Resources Tables 22** and **23** located at the beginning of the conditions of certification subsection.

3. Preparation of Management Plan: The Project owner shall submit to the CPM, BLM, and CDFG a draft Management Plan that reflects site-specific enhancement measures for the Mojave fringe-toed lizard habitat on the acquired compensation lands. The objective of the Management Plan shall be to enhance the value of the compensation lands for Mojave fringe-toed lizards, and may include enhancement actions such as weed control, fencing to exclude livestock, erosion control, or protection of sand sources or sand transport corridors.

Verification: No later than 30 days prior to beginning Project ground-disturbing activities, the Project owner shall provide written verification of an approved form of Security in accordance with this condition of certification. Actual Security shall be provided no later than 7 days prior to the beginning of Project ground-disturbing activities for each Project phase as described in **BIO-29**. The Project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of Project ground-disturbing activities for each Project phase.

No less than 90 days prior to acquisition of the property, the Project owner shall submit a formal acquisition proposal to the CPM, CDFG, and USFWS describing the parcels intended for purchase.

The Project owner, or an approved third party, shall provide the CPM, BLM, and CDFG, with a management plan for the compensation lands and associated funds within 180 days of the land or easement purchase, as determined by the date on the title. The CPM shall review and approve the management plan, in consultation with BLM and CDFG.

Within 90 days after completion of Project construction, the Project owner shall provide to the CPM and CDFG an analysis with the final accounting of the amount (detailed by habitat type) of Mojave fringe-toed lizard habitat disturbed during Project construction.

The Project owner shall provide written verification to the CPM, and CDFG that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient no later than 18 months from the start of ground-disturbing activities.

MITIGATION FOR IMPACTS TO STATE WATERS

BIO-21 The Project owner shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the state and to satisfy requirements of California Fish and Game Code sections 1600 and 1607.

1. Acquire Off-Site State Waters: The Project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes state jurisdictional waters per **BIO-29 – Table 2**, or the area of state waters directly or indirectly impacted by the final Project footprint. The Project footprint means all lands disturbed by construction and operation of the Palen Project, including all linears. The parcel or parcels comprising the ephemeral washes shall include desert dry wash woodland per **BIO-29 – Table 2**, or the acreage of desert dry was woodland impacted by the final Project footprint at a 3:1 ratio. The terms and conditions of this acquisition or easement shall be as described in Condition of Certification **BIO 12**, and the timing associated with **BIO-29** (phasing). The current estimated costs are included in **BIO-29 – Table 3** located at the beginning of the Conditions of Certification subsection. Mitigation for impacts to state waters shall occur within the Chuckwalla, East Salton Sea, Hayfield, Rice, or portion of Whitewater within the NECO, Hydrologic Units (HUs) or the Palo Verde Watershed and be prioritized within the Chuckwalla HU in the Palen or adjacent watersheds.

2. Security for Implementation of Mitigation: The Project owner shall provide financial assurances to the CPM and CDFG to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of state waters as described in this condition. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the CPM and CDFG in the form of an irrevocable letter of credit, a pledged savings account or Security prior to initiating ground-disturbing Project activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with CDFG, to ensure funding. The final amount due shall be determined by updated appraisals and the PAR analysis conducted pursuant to **BIO-12.**

3. Preparation of Management Plan: The Project owner shall submit to the CPM and CDFG a draft Management Plan that reflects site-specific enhancement measures for the drainages on the acquired compensation lands. The objective of the Management Plan shall be to enhance the wildlife value of the drainages, and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control.

4. Code of Regulations: The Project owner shall provide a copy of this condition (Condition of Certification **BIO-21**) from the Energy Commission Decision 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 upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the Project owner and the CPM, if the CPM in consultation with 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:

   a. The information provided by the Applicant regarding impacts to waters of the state is incomplete or inaccurate;

   b. New information becomes available that was not known in preparing the terms and conditions; or

   c. The Project or Project activities as described in the Revised Staff Assessment have changed.

5. Road Crossings at Streams. The Project owner shall preserve pre-development downstream flows and sediment transport in washes crossed by permanent roads by incorporating culverts and Arizona crossings at stream crossings. Arizona crossings are the preferred option and shall be employed wherever such crossings do not present a safety hazard and where the roadbed elevation allows the construction of such crossings. Drainages that have been graded for temporary construction access shall be restored to original contours and surface drainage patterns and shall be revegetated according to specifications in **BIO-8**.

6. Diffuser Design. The Project owner shall maintain pre-project flow patterns (location and volume of flows) downstream of the Project boundaries. Flows shall not be discharged indiscriminately as sheet flow across the entire length of the diffusers, irrespective of the natural surface drainage patterns, but rather shall be designed to discharge into existing natural washes downslope of the Project.

7. Best Management Practices: The Project owner shall also comply with the following conditions to protect drainages near the Project Disturbance Area:

   a. The Project owner shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible.

   b. The Project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other

activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows.

c. 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 Project owner to ensure compliance.

d. Spoil sites shall be located at least 30 feet from the boundaries and drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.

e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that 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 a drainage, shall be removed immediately.

f. 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.

g. 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 drainage.

h. No equipment maintenance shall occur within 150 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.

8. Changes of Conditions. A notifying report shall be provided to the CPM and CDFG if a 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 or until it is deemed unnecessary by the CPM, in consultation with CDFG.

   a. 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.

b. 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 substantial 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.

c. 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.

Verification: No less than 30 days prior to the start of construction-related ground disturbance activities potentially affecting waters of the state, 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. The Project owner shall also provide a discussion of work in waters of the state in Annual Compliance Reports for the duration of the Project.

No less than 30 days prior to beginning Project ground-disturbing activities for each project phase as described in **BIO-29**, the Project owner shall provide to the CPM design drawings of drainage diffusers depicting how these structures restore pre-development drainage patterns (location and volume of flows) to drainages downstream of the Project boundaries. At the same time the Project owner shall provide design drawings for temporary and permanent stream crossings.

No less than 30 days prior to beginning Project ground-disturbing activities, the Project owner shall provide the form of Security in accordance with this condition of certification. No later than 7 days prior to beginning Project ground-disturbing activities, the Project owner shall provide written verification of the actual Security. The Project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of Project ground-disturbing activities.

The Project owner, or an approved third party, shall provide the CPM, BLM, CDFG, and USFWS with a management plan for the compensation lands and associated funds within 180 days of the land or easement purchase, as determined by the date on the title. The CPM shall review and approve the management plan, in consultation with CDFG and the USFWS.

Within 90 days after completion of Project construction, the Project owner shall provide to the CPM, BLM, USFWS, and CDFG an analysis with the final accounting of the amount of jurisdictional state waters disturbed during Project construction.

The Project owner shall provide written verification to the CPM, BLM, USFWS and CDFG that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient no later than 18 months of the start of Project ground-disturbing activities.

The Project owner shall notify the CPM and CDFG, in writing, at least five days prior to initiation of Project ground-disturbing activities in jurisdictional state waters and at least five days prior to completion of Project activities in jurisdictional areas. The Project owner shall notify the CPM and CDFG of any change of conditions to the Project, impacts to state waters, or the mitigation efforts.

DECOMMISSIONING AND RECLAMATION PLAN

BIO-22 Upon Project closure the Project owner shall implement a final Decommissioning and Reclamation Plan. 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.

Verification: No fewer than 30 days prior to the start of Project-related ground disturbing activities or alternate date as agreed to with the BLM, the Project owner shall provide to the CPM (for review) and BLM (for review and approval) a draft Decommissioning and Reclamation Plan. The plan shall be finalized prior to the start of commercial operation and reviewed every five years thereafter and submitted to the CPM for review and to the BLM for approval. Modifications to the approved Decommissioning and Reclamation Plan shall be made only after approval from the BLM. The Project owner shall provide a copy of the approved Decommissioning and Reclamation Plan and any BLM approved revisions to the CPM.

GROUNDWATER-DEPENDENT VEGETATION MONITORING

BIO-23 The Project owner shall prepare a Groundwater-Dependent Vegetation Monitoring Plan for monitoring the Project effects of groundwater pumping on groundwater dependent vegetation. The monitoring shall encompass the area depicted in *Figure Soil and Water-3 (Project Only Revised Operational Water Supply End of 30 Years)* within the 0.1-foot drawdown polygon of the Model Predicted Drawdown (Galati & Blek 2010i). The vegetation and groundwater data collected as part of the Plan shall be used to determine if remedial action is required, as described in **BIO-24.**

The Project owner may forgo development of a Groundwater Dependent Vegetation Monitoring Plan, or may cease implementation

of such a plan, by providing evidence to the CPM that the source of water for the GDEs is a shallow perched water-bearing zone rather than the regional groundwater system and that the shallow perched water-bearing zone is unrelated and not influenced by the regional groundwater system that the Project owner proposes to use for water as described below under15a – 15d.

The Project owner shall develop and implement a Groundwater-Dependent Vegetation Monitoring Plan (Plan) that meets the performance standards described below and includes the following components:

1. Monitoring Objectives and Performance Standards. The objectives of the Plan shall be to monitor the Project effects of groundwater pumping on vegetation and groundwater-dependent ecosystems (GDEs) and, in conjunction with the remedial action described in **BIO-24**, to ensure that the Project groundwater pumping has a less than significant effect on biological resources. Monitoring shall be conducted at a level of detail adequate for detecting adverse effects, as reflected in vegetation attributes and groundwater levels in the shallow (alluvial) aquifer. The baseline for groundwater levels shall be the lowest baseline water level as measured at the Project site prior to the start of groundwater pumping.
2. Location of Monitoring Plots. The monitoring plots shall be established within the area depicted in *Figure Soil and Water -3 (Project Only Revised Operational Water Supply End of 30 Years)* within the Model Predicted Drawdown showing the 0.1-foot drawdown polygon (Galati & Blek 2010i). The majority of the plots shall be in the area north and east of the Project site, where groundwater-dependent ecosystems (GDEs) and the intersection of the ground surface and shallow groundwater are located, in the topographic lows in the valley.
3. Monitoring Plots and Controls. Because of the variation in vegetation types and depth to groundwater within the predicted groundwater drawdown zone, the study design shall treat the monitoring plot with a corresponding control plot as a pair (versus comparing the mean of all treatment plots to the mean of all control plots). The “control” plots shall consist of the data collected at the same plot during the baseline (pre-disturbance) monitoring for a pre-disturbance vs. post-disturbance comparison. Appropriate statistical methods shall be used to analyze the differences between the control and monitoring plots (for example, a one-tailed paired-sample statistical test (Manly 2008)[18]).

[18] Manly, B. 2008. Statistics for Environmental Science and Management (2nd ed). CRC Press/Chapman and Hall. 292 pages.

4. Off-Site Reference Plots: Off-site monitoring plots shall be established as reference sites to distinguish changes in plant vigor seen at the site from the effects of a region-wide drought. The off-site reference plots can be located within Chuckwalla Valley but shall be within areas that would not be affected hydrologically by groundwater pumping for the Project or other projects or agricultural operations. Off-site monitoring reference plots shall be located in the same general hydrologic and geologic setting (i.e., playa margins), in the same climatic region (Sonoran Desert region of California), and contain the same natural communities or vegetation alliances as those to which they are being compared. Impacts from pests and diseases, if present, must also be considered and excluded or adjusted for as part of the analysis. Data on climate and surface runoff in the study area shall be collected to identify "drought" conditions and correlate groundwater changes and weather changes.
5. Sample Size and Design The number of monitoring sites shall be established using appropriate statistical methods (for example, by a "priori power analysis" (Elzinga et al. 1998)) and shall be sufficient to achieve adequate (90%) statistical power. Following collection of the baseline data a statistical analysis shall be conducted to refine the power analysis and evaluate the adequacy of the sampling design. If the analysis of baseline data indicates that the sampling design is insufficient to achieve adequate statistical power, the design shall be modified (for example, by adding additional monitoring sites).
6. Water Table Monitoring. The Project owner shall install piezometers at each of the dominant vegetation community types within or near the monitoring plots. The number, location, depth and monitoring frequency of the piezometers shall be sufficient to establish the effect of Project groundwater pumping on the shallow aquifer water levels. At a minimum, each piezometer shall be monitored twice per year, in early spring (March) and post-monsoon (September). The piezometers shall be designed to monitor the maximum expected fluctuation in the water table and to last the duration of the Project. Data collected from the Project wells and piezometers for **SOIL &WATER-4** (Groundwater Level Monitoring, Mitigation, and Reporting) and S&W-6 (groundwater monitoring for the evaporation ponds and land treatment unit) shall be used to refine the modeling of the predicted groundwater drawdown and zone of influence after two years of data collection following the start of groundwater production. The Project owner shall submit to the CPM, for review and approval, a report on the results of the refined modeling. The report shall include all calculations and assumptions made in development of report data and interpretations, and all well monitoring data and piezometer data collected and used in the

calculations. If the results indicate that the drawdown and zone of influence is greater than the effect predicted in the GRI, and the GDE are found to be drawing groundwater that is hydraulically connected to the regional groundwater system, then the project owner will submit a revised monitoring plan for GDE areas outside of the original monitoring area.

7. Soil Monitoring. Soil salinity and pH shall be monitored annually at every monitoring plot. The Plan shall describe the monitoring devices and techniques used to collect and interpret this data, relative to ecosystem function. One soil core sample per community type shall be collected as part of the baseline data to establish the approximate rooting depth of the phreatophytes, and thereafter shall be repeated every five years. The coring method must provide a continuous core that will provide visual examination of roots and root nodules, soil profile, and soil moisture.

8. Baseline and Long-term Data Collection. At a minimum, baseline data shall be collected at all monitoring sites prior to the start of pumping; however, vegetation data collected from sites farther from the nearest wells will allow for the collection of multiple years of "pre-disturbance" data. Although the Project proposes to begin construction (and pumping) by December 2010, it appears that the effects of pumping would not reach the areas supporting the GDEs or phreatophytic plants for several years (see C.9 **Soil and Water Resources**). Because the proposed well in the northeast portion of the Project (Soil & Water Figure 1, Galati & Blek 2010i) is located in very close proximity to known phreatophytes, this well shall not be used within the first 3 years of the Project in order to allow an adequate period for baseline data collection in the area northeast of the Project. Subject to approval by the CPM, if groundwater pumping ceases or is replaced by other water sources, groundwater and vegetation monitoring shall continue for a period of 5 years or until refined modeling indicates that the groundwater levels have returned to baseline levels and the decline in plant vigor has been restored to pre-disturbance conditions.

9. Target Vegetation Population. The monitoring sites shall include GDEs and other vegetation potentially affected by the drawdown that occur within the zone of influence. The following phreatophytes have been documented to occur around Palen Lake: honey mesquite (*Prosopis glandulosa*); iodine bush (*Allenrolfea occidentalis*), bush seep-weed (*Suaeda moquinii*), jackass clover (*Wislizenia refracta*), four-wing saltbush (*Atriplex canescens*), allscale (*A. polycarpa*), spinescale (*A. spinifera*), a potentially new taxon of saltbush (*Atriplex* sp. nov. Andre), ironwood (*Olneya tesota*), palo verde (*Cercidium microphyllum*), cat's claw (*Acacia greggii*), and smoke tree (*Psorothamnus spinosus).*The final

number of each community type sample needed shall be based on the *priori* power test conducted after the first year of baseline data collection.

10. Fine-Scale Vegetation Mapping. Within the monitoring sites vegetation shall be mapped to the alliance level, consistent with classification protocol in the *Manual of California, 2nd edition* (Sawyer et al. 2009) but any important associations shall also be mapped. Mapping shall be done using minimum 1 meter resolution color orthophotos or higher resolution infrared imagery. The mapping shall also be used to determine the acreages of GDEs and establish the amount of security to be deposited in the event that adverse effects are detected during the monitoring. Boundaries of the permanent plots and any off-site reference sites shall be recorded using GPS technology and depicted on the geo-referenced aerials. GIS shapefiles and metadata shall be submitted along with the draft Plan and any subsequent revisions to the Plan (i.e., following the collection of baseline data and subsequent power analysis).

11. Guidelines for the Monitoring Plan. The Groundwater-Dependent Vegetation Monitoring Plan (Plan) shall be prepared with guidance from–*Measuring and Monitoring Plant Populations* (Elzinga et al. 1998). The Plan shall provide a detailed description of each of the following components:

    a. Sampling Design. The sampling design shall include a description of: a) the populations (vegetation types) sampled; b) number, size, and shape of the sampling units; c) layout of the sampling units; d) methods for permanently marking plots in the field; e) monitoring schedule/frequency; f) vegetation and other attributes sampled; and g) sampling objectives (target/threshold, change/trend-based) for each attribute.

    b. Habitat Function and Values. The Plan shall describe the hydrologic, geologic/geomorphic, geochemical, biological and ecological characteristics of the GDEs, and shall also describe whether species are obligate or facultative; root growth and water acquisition characteristics; morphological adaptations to the desert environment; reproduction and germination characteristics; general and micro-habitat preferences; obligate or facultative halophytes and phreatophytes; role in the morphology of dunes; and importance to wildlife, etc.

    c. Field techniques for measuring vegetation. This will include the vegetation (or other) attributes selected based on a demonstrated knowledge of the biology and morphology of the species, and include a discussion of the limitations involved in each measurement. Examples of appropriate field techniques

for measuring drought response include: percent dieback; live crown density; crown height and width, percent cover of live (versus dead or residual) vegetation, percent cover/frequency of associated species; percent composition of native versus non-native species; and percent cover based on wetland status codes (OBL, FACW, FAC, FACU, UPL[19]) and status as phreatophytes or halophytes. Photo monitoring shall not be considered an acceptable monitoring method but may be useful to conduct periodically (e.g., every 3 to 5 years).

d. Data Management. Including how the data will be recorded in the field (e.g., using a GPS data dictionary), processed and stored.

e. Training of personnel. Describe minimum standards for training and monitoring personnel.

f. Statistical analysis. Describe statistical methods used to analyze the monitoring data (incorporating the minimum standards for statistical power and error rate described above).

12. Peer Review of the Plan. The draft Plan shall undergo a peer review by recognized experts, which shall include one or more scientists with expertise in: the preparation of monitoring plans for plant populations; the physiological responses of desert phreatophytes to drought stress; assessing the effects of groundwater withdrawal on vegetation in the desert region; and biostatistics. The Project owner shall provide the resumes of suggested peer reviewers to the CPM for review and approval.

13. Annual Monitoring Report. Annual Monitoring Reports shall be submitted to the CPM and BLM and shall include, at a minimum: a) names and contact information for the responsible parties and monitoring personnel; b) summaries of the results of the monitoring as required in **Soil&Water-4 and Soil&Water-6**; c) piezometer monitoring results**,** and a comparison of predicted versus actual water table declines; d) summary of the results of vegetation, groundwater, and soil monitoring data compared to the baseline data for each plot (pre- versus post-disturbance comparison); e) description of sampling and monitoring techniques used for each attribute; f) description of the data management and statistical analysis; g) photos; h) conclusions and recommendations for remedial action, if the monitoring data indicates that the threshold described below has been met.

[19] OBL= Obligate Wetland; FACW= Facultative Wetland; FAC= Facultative; FACU= Facultative Upland UPL= Obligate Upland. *In;* U.S. Fish and Wildlife Service. 1993. **1993 supplement to list of plant species that occur in wetlands: Northwest (Region 9).** Supplement to U.S. Fish & Wildlife Service Biological Report 88 (24.9). Online: http://plants.usda.gov/wetinfo.html

The first Annual Monitoring Report shall include an appropriate statistical analysis using the first year baseline monitoring data to assess whether the sampling design was adequate to provide statistically meaningful data, as described above. If warranted, the first year Annual Monitoring Report shall include recommendations for revisions to the Plan based on this analysis.

14. Threshold for Remedial Action: The Project owner shall implement remedial action, as described in Condition of Certification **BIO-24,** if the monitoring described in **BIO-23** detects a decline in plant vigor of 20 percent or more compared to the same plots pre-disturbance AND also detects a decline in the alluvial (shallow) aquifer confirmed by two consecutive annual water monitoring events in any amount greater than the lowest baseline water level as measured prior to groundwater pumping. If regional drought, off-site pumping or other activities unrelated to the Project are also contributing to the decline in water table, the Project owner shall only be responsible for the portion of the effect that can be statistically demonstrated to be the result of Project pumping. To determine whether declines in plant vigor are related to Project pumping as opposed to regionwide drought or offsite pumping conditions the Project owner shall install a network background monitoring piezometers and incorporate these data in the assessment of Project-related effects on GDEs.

15. To understand the source of the water for the GDEs, the Project owner shall prepare a groundwater investigation work plan for submittal to the CPM that will outline steps to determine if the source of water for the GDEs is a shallow perched water-bearing zone rather than the regional groundwater system, and that the shallow perched water-bearing zone is not hydraulically connected to the regional groundwater system. The groundwater investigation will be comprised of the following components:

    a. A continuous soil coring program at five locations to be identified based on field mapping of GDEs in the area shown on the Figure *Soil and Water-3 (Project Only Revised Operational Water Supply End of 30 Years)* within the 0.1-foot drawdown polygon of the Model Predicted Drawdown (Galati & Blek 2010i). One of the five borings will be drilled adjacent to a GDE containing mesquite, and the other four located to provide an assessment of the range of plant communities within GDEs in the area of interest (i.e., to assess the variability of GDE plant type water requirements and root zone depth).

    b. The soil cores shall extend a minimum of 20 feet below the deepest root zones of the GDEs investigated to demonstrate separation between the shallow and regional water zones. At a

minimum the soil cores shall show that 20 feet of unsaturated conditions are present below the deepest root zones of the plant communities investigated. The soil cores will be logged by a professional geologist in the State of California, and the coring program will be overseen by a qualified biologist with experienced in the plant communities identified within each GDE.

c. A sampling plan for selective analysis of soil moisture content and saturation will also be conducted for each soil core advanced adjacent to a GDE. The number and frequency of soil samples shall be established to confirm field observations of soil moisture content in the shallow water-bearing zone, through the root zone and in the deeper sediments below the root zone above the regional water table. Soil samples shall be analyzed for moisture content after ASTM Method D2216.

d. Depending on the results of the soil coring program, piezometers may be installed as monitoring points for the regional water table and to monitoring changes in the shallow water-bearing zone from Project pumping. In the report of results from the soil coring program, a water-level monitoring program shall be proposed if it is shown that the regional water table is in direct hydraulic connection to the source of water to the GDE's. If the field data clearly shows an unsaturated zone of 20 feet or more below the deepest root zones of the GDEs, then piezometers will not be installed.

If the results of the pre-construction field observations and soil sampling demonstrate 20 feet or more of unsaturated sediments between the deepest root zones of the GDEs and the regional water table, there will be no requirements to implement any of the underlying conditions as provided for in **BIO-23** and **BIO-24**, as sufficient evidence will have been provided to demonstrate that the groundwater is not the source for the GDE's.

If the refined modeling of the predicted groundwater drawdown and zone of influence after two years of data collection (following the start of groundwater production), as described in Subsection 6 of this condition and in **SOIL&WATER-4** and **SOIL&WATER-6**, indicates the drawdown or zone of influence would be greater than predicted in the Project owner's Groundwater Resources Investigation (GRI), and the GDE are found to be drawing groundwater that is hydraulically connected to the regional groundwater system, then the project owner will submit a revised monitoring plan for GDE areas outside of the original monitoring area .

Verification: At least 30 days prior to operation of project pumping wells, the Project owner shall submit to the CPM and BLM for review and approval a draft

Groundwater-Dependent Vegetation Monitoring Plan (Plan). The final plan shall incorporate recommendations from the peer review and shall be submitted to the CPM and BLM no less than 15 days prior to the start of groundwater pumping.

No less than 15 days prior to the start of groundwater pumping the Project owner shall submit as-built drawings indicating the location and depth of piezometers, and shall provide evidence that the piezometers are operational.

Baseline groundwater and groundwater-dependent vegetation monitoring shall begin 15 days prior to construction and shall occur every year during the same one to two week time period in early spring (March) and post-monsoon (September).

The First Annual Monitoring Report shall be provided to the CPM and BLM no later than January 31 following the first year of data collection, and shall include an assessment of whether the sampling design would provide statistically adequate monitoring data and whether modifications to the monitoring design would be needed. If the first Annual Monitoring Report recommends a revised sampling design, the Project owner shall submit the revised Plan to the CPM and BLM no later than March 1.

Thereafter the Project owner shall submit a Groundwater-Dependent Vegetation Annual Monitoring Report to the CPM and BLM no later than January 31 of each year for the duration of Project operation.

If the project owner elects to prepare a geologic and groundwater investigation (as described in Subsection 15 a-d of this condition) to determine if the source of water for the GDEs is a shallow perched water-bearing zone rather than the regional groundwater system, and that the shallow perched water-bearing zone is not hydraulically connected to the regional groundwater system that the Project owner proposes to use for water supply, the project owner shall submit the resumes of at least two independent, qualified peer reviewers 45 days prior to submittal of the report to the CPM and BLM for review and approval. The Project owner must submit the results of their investigation, subject to review and approval by the CPM, prior to the start of construction or Project groundwater use.

If the refined modeling conducted according subsection 6 of this condition indicates that the drawdown and zone of influence is greater than the effect predicted in the GRI, and the GDE are found to be drawing groundwater that is hydraulically connected to the regional groundwater system, then the Project owner shall submit a revised monitoring plan for GDE areas outside of the original monitoring area. The Revised Monitoring Plan shall be submitted no later than January 31 in the third year following the start of groundwater pumping and well monitoring.

REMEDIAL ACTION AND COMPENSATION FOR ADVERSE EFFECTS TO GROUNDWATER-DEPENDENT BIOLOGICAL RESOURCES

BIO-24 If monitoring detects Project-related adverse impacts to groundwater dependent ecosystems (GDEs), as described in **BIO-23** and the impacts are shown to be the result of a decline in the regional groundwater table due to Project pumping, the Project owner shall determine which well(s) are the source of the adverse impacts and shall implement remedial measures as outlined below. If regional drought, off-site pumping or other activities unrelated to the Project are also contributing to the decline in water table, the Project owner shall only be responsible for the portion of the effect that can be demonstrated to be the result of Project pumping. The remedial measures shall be implemented with the objective of restoring the groundwater levels to the baseline described in **BIO-23**, and shall compensate for impacts to GDEs with off-site habitat acquisition or restoration. The Project owner shall do all of the following:

1. Modification and/or Cessation of Pumping: The Project owner shall provide to the CPM evidence based on groundwater monitoring and modeling indicating which wells are likely to be causing adverse impacts to GDEs. The Project owner shall initially modify operation of those wells to reduce the offsite drawdown in the areas of the GDEs.

   Remedial Action Plan: The objective of remedial action shall be restoration of the spring groundwater table in the alluvial (shallow) aquifer to baseline levels, as described in **BIO-23**. The Remedial Action Plan shall include one or more of the following measures: 1) Begin rotational operation of the site water supply wells reducing pumping in wells that are the most proximal to the GDEs, 2) reducing the pumping rate in the wells that have been identified as the cause of the drawdown in the area of the GDEs, 3) focus pumping on wells on the southern portion of the project site away from the GDEs 4) cease operation of the well(s) that are the cause of the drawdown. Groundwater water level monitoring shall increase to a frequency necessary to document change and recovery in the drawdown from the changes in the pumping program.

   The Remedial Action Plan shall include a water level monitoring program of sufficient frequency to document changes in operation of the water supply wells, and demonstrate that the water table has been restored to baseline levels.

   The Project owner shall use the following guidelines for determining if an ecosystem (or species) is phreatophytic (Brown et al 2007; LeMaite et al 1999; Froend & Loomes 2004):

a. It is not known or documented to depend on groundwater, based on scientific literature or expert opinion (local knowledge can be useful in making a determination as some species' dependence varies by setting);

b. The species are not known to have roots extending over a meter in depth;

c. The community does not occur in an area where the water table is known to be 'near' the surface (relative to the documented rooting depths of the species);

d. The herbaceous or shrub vegetation is not still green and/or does not have a high leaf area late in the dry season (compared to other dry areas in the same watershed that do not have access to groundwater).

2. Compensate for Loss of Ecosystem Function. If the decline in the water table in the alluvial (shallow) aquifer is accompanied by a corresponding decline in plant vigor greater than 20 percent (as described in BIO-23), the Project owner shall compensate for the loss of habitat functions and values in the affected groundwater-dependent ecosystems. The amount of compensation shall be at a 3:1 ratio based on area of affected area, using mapping as described in **BIO-23**. The Project owner shall acquire, in fee or in easement, a parcel or parcels of land that include an amount of groundwater-dependent vegetation that is of the same habitat-type as the community affected (e.g., mesquite woodland, alkali sink scrubs, or microphyll woodland) and of an equal or greater habitat quality. The compensation lands shall be located within the watersheds encompassing the Chuckwalla or Palen valleys. As an alternative to habitat compensation, the Project owner may submit a plan that achieves restoration of lost habitat function and value at another location within the Chuckwalla Groundwater Basin that contains the same habitats as those affected.

   a. Review and Approval of Compensation Lands Prior to Acquisition or Restoration. The Project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands in relation to the criteria listed above. Approval from the CPM shall be required for acquisition of all compensatory mitigation parcels.

   b. Preparation of Management Plan: The Project owner shall submit to the CPM and CDFG a draft Management Plan that reflects site-specific enhancement measures for the acquired compensation lands. The objective of the Management Plan

shall be to maintain the functions and values of the acquired GDE plant communities and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control.

c. Delegation of Acquisition. The responsibility for acquisition of compensation lands may be delegated to NFWF or another third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM prior to land acquisition, enhancement or management activities.

Verification: No more than 30 days following submission of the Groundwater Dependent Vegetation Annual Monitoring Report the Project owner shall submit to the CPM for review and approval a draft Remedial Action Plan if that report indicates that the threshold for remedial action as described in **BIO-23** has been met. At the same time the Project owner shall submit written evidence that the Project wells responsible for impacts to groundwater levels and GDEs have modified their operation or ceased operation.

A final Remedial Action Plan shall be submitted to the CPM within 30 days of receipt of the CPM's comments on the draft plan. No later than 6 months following approval of the final Remedial Action Plan, the Project owner shall provide to the CPM written documentation of the effectiveness of the completed remedial action.

No more than 30 days following submission of the Groundwater-Dependent Vegetation Annual Monitoring Report**,** the Project owner shall provide to the CPM a final accounting of the amount of GDE habitat affected by Project groundwater pumping.

No more than 6 months following submission of the Groundwater-Dependent Vegetation Annual Monitoring Report the Project owner shall submit a formal acquisition or restoration proposal to the CPM, describing the mitigation parcels intended for purchase or restoration. The acquisition/restoration proposal shall describe how the proposed parcels meet the acquisition or restoration criteria described in this condition.

No fewer than 90 days prior to compensatory acquisition or restoration, the Project owner shall submit to the CPM and obtain CPM approval of any agreements to delegate land acquisition to an approved third party, or to manage compensation lands; such agreement shall be executed and implemented no more than months following approval of the acquisition proposal.

The Project owner shall provide written verification to the CPM that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient no later than 18 months from submission of the Groundwater-Dependent Vegetation Annual Monitoring Report.

GOLDEN EAGLE INVENTORY AND MONITORING

BIO-25 The Project owner shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles.

1. Annual Inventory During Construction. For each calendar year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within one mile of the Project boundaries. Survey methods for the inventory shall be as described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS.
2. Inventory Data: Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.
3. Determination of Unoccupied Territory Status: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles ONLY after completing at least 2 full surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.
4. Monitoring and Adaptive Management Plan: If an occupied[20] nest is detected within one mile of the Project boundaries, the Project owner shall prepare and implement a Golden Eagle Monitoring and

[20] An occupied nest is one used for breeding by a pair of golden eagles in the current year. Presence of an adult, eggs, or young, freshly molted feathers or plucked down, or current years' mutes (whitewash) also indicate site occupancy. Additionally, all breeding sites within a breeding territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site is considered occupied throughout the periods of initial courtship and pair bonding, egg-laying, incubation, brooding, fledging, and post-fledging dependency of the young.

Adaptive Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of Project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Adaptive Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

Verification: No fewer than 30 days from completion of the golden eagle inventory the project owner shall submit a report to the CPM, BLM, CDFG, and USFWS documenting the results of the inventory.

If an occupied nest is detected within one mile of the Project boundary during the inventory the Project owner shall contact staff at the USFWS Carlsbad Office and CDFG within one working day of detection of the nest for interim guidance on monitoring and nest protection. The project owner shall provide the CPM, CDFG, and USFWS with the final version of the Golden Eagle Monitoring and Management Plan within 30 days after detection of the nest. This final Plan shall have been reviewed and approved by the CPM in consultation with USFWS and CDFG.

EVAPORATION POND NETTING AND MONITORING

BIO-26 The Project owner shall 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. Netting with mesh sizes other than 1.5-inches may be installed if approved by the CPM in consultation with CDFG and USFWS. 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 shall never contact the water. Monitoring of the evaporation ponds shall include the following:

1. Monthly Monitoring. 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, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. The monthly survey shall be conducted in 1 day for a minimum of 2 hours following sunrise (i.e., dawn), a minimum of 1 hour mid-day (i.e., 1100 to 1300), and a minimum of 2 hours preceding sunset (i.e., dusk) in order 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 Project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within 1 day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within 2 days of the discovery to the CPM, CDFG, and USFWS.

2. Dead or Entangled Birds. 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 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.

3. Quarterly Monitoring. If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected at the evaporation ponds by or reported to the Designated Biologist, monitoring, as described in paragraph 1, can be conducted on a quarterly basis.

4. Biannual Monitoring. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist and with approval from the CPM, USFWS, and CDFG, future surveys may be reduced to 2 surveys per year, during the spring nesting season and during fall migration. If approved by the CPM, USFWS, and CDFG, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.

5. Modification of Monitoring Program. CDFG or USFWS may submit a request for modifications to the evaporation pond monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed. Modifications to the evaporation pond monitoring described above and implementation of adaptive

management measures shall be made only after approval from the CPM, in consultation with USFWS and CDFG.

Verification: No less than 30 days prior to operation of the evaporation ponds the project owner shall provide to the CPM as-built drawings and photographs of the ponds indicating that the bird exclusion netting has been installed. For the first year of operation the Designated Biologist shall submit quarterly reports to the CPM, BLM, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. Thereafter the Designated Biologist shall submit annual monitoring reports with this information. The quarterly and 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 annual report shall be submitted to the CPM, BLM, CDFG, and USFWS no later than January 31 of every year for the life of the project.

BIO-27 *Staff and the Applicant have agreed to delete this condition.*

IN-LIEU FEE MITIGATION OPTION

BIO-28 The Project owner may choose to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, provided that the Project's in-lieu fee proposal is found by the Commission to the mitigate the impacts identified herein. If the in-lieu fee proposal is found by the Commission to be in compliance, and the Project Owner chooses to satisfy its mitigation obligations through the in-lieu fee, the Project Owner shall provide proof of the in-lieu fee payment to the CPM prior to construction related ground disturbance.

Verification: If electing to use this provision, the Project owner shall notify the Commission and all parties to the proceeding that it would like a determination that the Project's in-lieu fee proposal would mitigate for the impacts identified herein. Prior to construction related ground disturbance the Project Owner shall provide proof of the in lieu fee payment to the CPM.

PROJECT CONSTRUCTION PHASING PLAN

BIO-29 The Project Owner shall provide compensatory mitigation for the total Project Disturbance Area and may provide such mitigation in two phases for Units 1 and 2 as described in Figures BIO-5 and BIO-6 in the July 19, 2010 Response to Data Request (AECOM 2010u). For purposes of this condition, the Project Disturbance Area means all lands disturbed in the construction and operation of the Palen Project or its phases, including all linears and ancillary facilities, as well as undeveloped areas inside the Project's boundaries that would no longer provide viable long-term habitat.

The disturbance area for each project Phase and resource type is provided in **BIO-29** Table 1 below. Mitigation is shown in **BIO-29** Table 2, and mitigation security is shown in **BIO-29 Table 3,** below**.** This table shall be refined prior to the start of each construction phase with the disturbance area adjusted to reflect the final Project footprint for each phase. Prior to initiating each phase of construction the Project owner shall submit the actual construction schedule, a figure depicting the locations of proposed construction and amount of acres to be disturbed. Mitigation acres are calculated based on the compensation requirements for each resource type as described in the above Conditions of Certification – **BIO-12** (Desert Tortoise), **BIO-20** (Mojave Fringe-toed Lizard), **BIO-18** (Western Burrowing Owl), and **BIO-22** (State Waters). Compensatory mitigation for each phase shall be implemented according to the timing required by each condition.

BIO-29 Table 1. Area of Habitat Type Disturbed by Construction Phase (acres)[1]

	Reconfigured Alternative 2 Disturbance Area		**Reconfigured Alternative 3 Disturbance Area**	
Habitat Type	**Phase 1**	**Phase 2**	**Phase 1**	**Phase 2**
MFTL Habitat				
Stabilized & Partially Stabilized Dunes	44	112	59	128
Non-Dunes	637	711	509	845
Indirect Impacts[2]	**117**	**27**	**280**	**-186**
TOTAL	**798**	**850**	**848**	**787**
DT Habitat				
DT Habitat - inside critical habitat[3]	225	0	225	0
DT Habitat - outside critical habitat	2115	1855	1969	1933
TOTAL[4]	**2340**	**1855**	**2194**	**1933**
WBO Habitat				
Impacts to 4 WBO	4 WBO	0	4 WBO	0
TOTAL	4 WBO	**0**	4 WBO	**0**
Jurisdictional Waters (Direct Impact)				
Dry Desert Wash Woodland	202	6	193	5
Unvegetated Ephemeral Dry Wash	99	81	95	73
Subtotal	***301***	***87***	***287***	***78***

Jurisdictional Waters (Indirect Impact)				
Dry Desert Wash Woodland	0	0	0	0
Unvegetated Ephemeral Dry Wash	17	2	15	2
Subtotal	***17***	***2***	***15***	***2***
TOTAL WATERS	**317**	**89**	**303**	**80**

1 – Sources: Reconfigured Alternatives 2 and 3 - Solar Millennium 2010l.
2 –Some indirect impacts in Alternative 3 within Phase 1 become direct impact in Phase 2. The security in Phase 3 is reduced to credit that portion of the security already provided to cover the indirect impacts in Phase 2.
3 – Impacts to desert tortoise critical habitat are assumed to be wholly within the Phase 1 Project Disturbance Area.
4 – Raven Acres subject to the one-time USFWS Regional Raven Management Program fee are equivalent to the total DT Habitat impact acreages.

BIO 29 Table 2. Mitigation by Habitat Type Disturbed by Construction Phase (acres) [1]

Habitat Type	Mitigation Ratio	Reconfigured Alternative 2 Disturbance Area		Reconfigured Alternative 3 Disturbance Area	
		Phase 1	Phase 2	Phase 1	Phase 2
MFTL Habitat					
Stabilized & Partially Stabilized Dunes	3:1	**132**	336	178	385
Non-Dunes	1:1	637	711	509	845
Indirect Impacts	0.5:1	**59**	**14**	**140**	**-93**
TOTAL		***828***	***1061***	***827***	***1137***
DT Habitat					
DT Habitat - inside critical habitat[2]	5:1	1127	0	1126	0
DT Habitat - outside critical habitat	1:1	2115	1855	1969	1933
TOTAL		**3242**	**1855**	**3095**	**1933**
WBO Habitat					
Impacts to 4 WBO	19.5 acre/WBO	78	0	78	0
TOTAL		78	**0**	78	**0**

Habitat Type	Mitigation Ratio	Reconfigured Alternative 2 Disturbance Area		Reconfigured Alternative 3 Disturbance Area	
		Phase 1	Phase 2	Phase 1	Phase 2
Jurisdictional Waters (Direct Impact)					
Vegetated (Dry Desert Wash Woodland)	3:1	605	18	578	15
Unvegetated Ephemeral Dry Wash	1:1	99	81	95	73
Subtotal		***704***	***99***	***673***	***88***
Jurisdictional Waters (Indirect Impact)					
Vegetated (Dry Desert Wash Woodland)	1.5:1	0	0	0	0
Unvegetated Ephemeral Dry Wash	0.5:1	8	1	8	1
Subtotal		***8***	***1***	***8***	***1***
TOTAL WATERS		**712**	**100**	**680**	**89**

1 – Sources: Reconfigured Alternatives 2 and 3 - Solar Millennium 2010l.
2 – Impacts to desert tortoise critical habitat are assumed to be wholly within the Phase 1 Project Disturbance Area.

BIO-29 Table 3. Mitigation Securities by Construction Phase (acres) [1]

Habitat Type	Reconfigured Alternative 2 Security		Reconfigured Alternative 3 Security	
	Phase 1	Phase 2	Phase 1	Phase 2
MFTL Habitat	$2,553,714	$3,283,006	$2,550,739	$3,509,144
DT Habitat	$10,006,571	$5,735,553	$9,551,173	$5,967,642
Raven Fee Impacts[2]	$340,410	$194,775	$324,975	$202,965
WBO Habitat	$250,089	$0	$250,089	$0
Jurisdicational Waters	$2,190,556	$315,550	$2,095,340	$282,820
Total	**$15,341,340**	**$9,528,883**	**$14,772,315**	**$9,962,570**

1– Securities (aside from Raven fees) based on REAT Biological Resources Mitigation/Compensation Cost Estimate Calculation Table - July 23, 2010 (REAT 2010), adjusted to reflect a 160-acre parcel size estimate. Security does not include NFWF fees. Security amounts may change based on final Project footprint. The final amount shall be determined by an updated appraisal conducted as described in **BIO-12.**
2 – Based on U.S. Fish and Wildlife Service Cost Allocation Methodology for Implementation of the Regional Raven Management Plan, dated July 9, 2010 (USFWS 2010b). Fee calculated at $105/acre for direct project impacts.

Verification: The Project owner shall not disturb any area outside of the area that has been approved for that phase of construction and for the previously approved phases of construction.

No less than 30 days prior to the start of desert tortoise clearance surveys for each phase, the Project owner shall submit a description of the proposed construction activities for that phase to CDFG, USFWS and BLM for review and to the CPM for review and approval. The description for each phase shall include the proposed construction schedule, a figure depicting the locations of proposed construction, and amount of acres of each habitat type to be disturbed.

No less than 30 days prior to beginning Project ground-disturbing activities for each phase, the Project owner shall provide the form of Security in accordance with this Condition of Certification in the amounts described in **BIO-29 Table 3.** No later than 7 days prior to beginning Project ground-disturbing activities for each phase, the Project owner shall provide written verification of the actual Security. The Project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of Project ground-disturbing activities for each phase.

B. SOIL AND WATER RESOURCES

This section focuses on the soil and water resources associated with the Palen Solar Power Project (PSPP or Project), including the Project's potential to induce erosion and sedimentation, alter geomorphic features/processes, modify drainage and flooding conditions, adversely affect groundwater supplies, and degrade water quality. The analysis also considers potential cumulative impacts to soil and water resources related to future foreseeable projects and site decommissioning. Mitigation measures are included in the Conditions of Certification to ensure that the project will have no significant impacts on the environment and will comply with all applicable LORS.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Background and Setting

The Applicant, Palen Solar I, LLC (PSI), proposes to develop and operate a 500 megawatt (MW) solar energy facility in eastern Riverside County, approximately 35 miles west of the City of Blythe, 10 miles east of the community of Desert Center, and 0.5 mile north of U.S. Interstate 10 (I-10). (Ex. 301, **Soil and Water Resources - Figure 1**.) The Project is a concentrated solar thermal electric generating facility comprised of two independent solar plants (units), each of which would have a nominal capacity of 250 MW. The proposed Project includes a right-of-way (ROW) area of approximately 5,200 acres on generally level desert terrain administered by the U.S. Bureau of Land Management (BLM). The total area proposed for disturbance within the Project ROW is approximately 4000 acres, with this area encompassing the plant site and related facilities (including a new 1,350-foot long access road), all of which would be located within an associated perimeter fence. Additional minor and localized disturbance would be associated with off-site transmission facilities as outlined below.

Electricity produced by both proposed units would be distributed from a central, internal switchyard via a new 230-kV generation tie (gen-tie) line. The proposed gen-tie line would exit the northwest corner of the PSPP site and extend west and south through BLM lands and across I-10, to one of the two potential sites identified for the planned Southern California Edison (SCE) Red Bluff Substation.

The Project site is located in the Mojave Desert Geomorphic Province (Province), a broad region characterized by isolated mountain ranges and intervening desert plains. Drainage within the Province is interior and enclosed (i.e., with no outlet

to the ocean), and associated flows often terminate in one of many local playas (dry lake beds). The Project is within Chuckwalla Valley, near the toe of alluvial fans emanating from the Chuckwalla Mountains to the south, the Coxcomb Mountains to the north, and the Palen Mountains to the northeast. The Project area is bisected by a broad valley-axial drainage that extends between these mountains and drains a short distance north to the Palen Lake playa (Palen Dry Lake). On-site drainage is generally to the north (toward the Palen Dry Lake), and occurs in a number of alluvial channels and as unconfined flow (sheetflow) during larger storm events. On-site elevations range from approximately 680 feet above mean sea level (msl) in the southwest corner, to 425 feet above msl near the northeastern property boundary. (Ex. 301, pp. C.9-7, C.9-8.)

2. Soil and Erosion

Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice, as well as by downward or down-slope movement in response to gravity. Based on the United States General Soil Map and a site-specific soil investigation conducted by the Applicant, soils within the Project site are characterized by the Rosita-Dune Land-Carsitas soil mapping unit (Rositas soils), while the proposed gen-tie line corridor encompasses the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit (Vaiva soils). Rositas soils are primarily sandy in nature and include active sand dunes in the northern portion of the site, while Vaiva soils consist generally of gravelly loams, sands and sandy loams. Both soil units include a number of individual soil types and associated physical/chemical characteristics, with on-site soils considered unsuitable for cultivation and commercial crop production. (Ex. 301, pp. C.9-10 - C.9-13.)

The evidence indicates that Project site soils are subject to wind erosion due to their generally sandy nature. Water-related sheet and rill erosion potential under the present undisturbed conditions can be considered negligible, however, and the site is not currently prone to significant mass wasting (gravity-driven erosion and non-fluvial sediment transport). When soils are disturbed during construction, potential wind- and water-related erosion rates would increase, along with associated effects such as soil loss and increased downstream/downwind sediment yields from on-site disturbed areas. Project construction would be completed over a 39-month period, with associated earthwork including excavation for foundations and underground systems and a total cut and fill volume of approximately 4.5 million cubic yards. Project cut and fill would be balanced within the site, with no net import or export of material. The vast majority of Project grading and excavation would occur on the Project site ROW, with only relatively minor excavation needed for installation of gen-tie

facilities (e.g., at the locations of monopoles). In addition, the evidence indicates that operational conditions would increase water-related erosion potential for most on-site soils relative to undisturbed conditions, although wind erosion potential would generally decline during Project operation. (Ex. 301, pp. C.9-37 - C.9-40.)

The evidence shows that Project-related erosion impacts are potentially significant. Accordingly, a Drainage Erosion and Sedimentation Control Plan (DESCP) is proposed to address potential Project-related wind and water erosion impacts. This plan would include applicable measures, such as best management practices (BMPs), to identify, avoid/reduce, monitor, and document potential erosion and sedimentation effects from the PSPP Project. Conditions of Certification **SOIL & WATER-1** and **SOIL & WATER-8** through **SOIL & WATER-12** are hereby adopted to address these potential issues. Specifically, **SOIL & WATER-1** requires the implementation of an approved DESCP, while **SOIL & WATER-8** through **SOIL & WATER-12** entail preparation/implementation of updated and/or revised drainage/hydraulic analyses, and channel design and erosion protection/maintenance efforts. Implementation of these measures would ensure that all potential soil erosion impacts from Project-related construction and operation are less than significant.

3. Geomorphology

The Project site extends more than one mile into the Chuckwalla Valley sand transport corridor, a regionally significant geomorphic feature in which sand is transported downwind along the valley to the Colorado River. As originally designed, project intrusion into this corridor would result in approximately 1,390 acres of direct impacts to associated dunes, and 1,630 acres of indirect impacts from creation of downwind "sand shadows" (i.e., areas of existing dune habitat where sand would be eroded downwind but not replaced from upwind sources). Previous studies have shown that such sand shadows result in deflation, substrate coarsening and complete loss of Mojave Fringe Toad Lizard (MFTL) habitat within approximately 4 to 17 years. (Ex. 301, p. C.9-40.) However, in response to Staff comments, the Applicant developed two alternatives, Reconfigured Alternatives #2 and #3, which reduce the project's intrusion into the sand transport corridor and correspondingly reduce sand transport impacts below the level of significance. Additional discussion of this impact and related potential design/mitigation strategies is provided in the **Biological Resources** section of this Decision.

4. Groundwater Basin Balance

Groundwater resources in the Project site and vicinity are associated with the Chuckwalla Valley Groundwater Basin (CVGB), which encompasses approximately 940 square miles and includes the Project site. The Orocopia Valley and Pinto Valley groundwater basins are adjacent to the west, while the Palo Verde Mesa Groundwater Basin (PVMGB) is adjacent to the east. Natural recharge to the CVGB is from sources including precipitation, inflow from the Orocopia Valley and Pinto Valley groundwater basins, agricultural return flows, and return flows from treated wastewater return flows. While the groundwater budget for the CVGB includes complex relationships between recharge, subsurface flows, withdrawals and evapotranspiration at Palen Dry Lake, the evidence indicates that inflow exceeds outflow and a positive balance of approximately 2,600 acre-feet[1] per year (afy) occurs under average conditions (Ex. 301, pp. C.9-16 - C.9-25.) Based on site-specific investigation, groundwater depths at the Project site vary between approximately 180 to 200 feet below the surface, and the evidence suggests that local aquifer levels have been generally stable over the last 40 years. (Ex. 301, p. C.9-27.)

All water used in association with the project would be derived from local groundwater aquifers. The evidence indicates that proposed groundwater used during Project construction (approximately 1,917 afy) and operation (300 afy) would not exceed the existing positive yearly balance of 2,600 afy, and would therefore not place the groundwater basin into overdraft (defined as the condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions). (Ex. 301, pp. C.9-41, C.9-42.)

Staff expressed concern that project-related groundwater use could affect the adjacent PVMGB, by inducing flows from the Colorado River into that basin. However, given the distance from the Colorado River, project groundwater pumping is not expected to result in significant direct impacts to the PVMGB. Currently, the CVGB balance is positive by approximately 2,608 afy whereby inflow (approximately 13,719 afy) to the basin is slightly greater than estimated outflows (approximately 11,111 afy) to the basin. Approximately 400 afy is attributed to subsurface outflow to the adjacent Palo Verde Mesa Groundwater Basin. It is anticipated that groundwater extraction during construction

[1] One acre-foot equals approximately 326,000 gallons.

(approx.1,917 afy) and operation (approx.300 afy) will not significantly impact the CVGB balance as the approx.1,917 afy during construction and the approx. 300 afy during operations would not exceed the positive yearly balance of 2,608 afy. Given the location of the Project and the anticipated annual Project water requirements, Staff does not anticipate that the project will have a significant impact on the adjacent Palo Verde Mesa groundwater basin. The suggestion, therefore, that wells drawing groundwater from these basins could induce flow from the Colorado lacks support in the evidence. (Exs. 27; 301, pp. C.9-41 - C.9-42.)

Even though water supplies in the Colorado River are fully appropriated, with the existing appropriations encompassing all consumptive uses (including applicable groundwater pumping) pursuant to related Supreme Court decrees, any potential impacts to groundwater basin balance would be addressed through Condition of Certification **SOIL & WATER-14** which we hereby adopt. Specifically, this condition requires the Project owner to implement a Water Supply Plan to mitigate Project impacts to the PVMGB groundwater budget (potentially including efforts such as conservation programs, funding of irrigation improvements, purchasing water rights, and/or tamarisk removal). We also adopt Condition of Certification **SOIL & WATER-17**, requiring the project owner to estimate the quantity of surface water impacts associated with Project groundwater extraction (i.e., to estimate the amount of water that must be replaced pursuant to Condition of Certification **SOIL & WATER-14**). We further note that future water use in the CVGB may be governed by impending regulations being formulated by the U.S. Bureau of Reclamation (which oversees management and appropriation of Colorado River water). With implementation of these Conditions of Certification, project impacts on Groundwater Basin Balance will be reduced below the level of significance. (Ex. 301, p. C.9-44; 10/13/10 RT 7:6 – 9:25, Testimony of Michael Cressner, p. 4 and Mike Flack, p. 3.)

Public/agency comments from the Colorado River Board of California, Center for Biological Diversity, Defenders of Wildlife, and EPA were also received on this issue. These comments identified similar concerns as described above regarding a connection between the Colorado River and the CVGB/PVMGB, as well as related impacts from Project groundwater extraction.

5. Groundwater Levels

The Project has the potential to lower groundwater levels as a result of water production during both construction and operation. The lowering of groundwater levels could create a significant impact if it would result in: (1) impacts to existing water wells in the basin (e.g., causing wells to go dry, substantially reducing pumping capacity, or substantially increasing pumping frequency); (2) impacts to the water table in areas where deep-rooted groundwater-dependent plant communities (phreatophytes[2]) or halophyte (salt-tolerant) vegetation is prevalent, and/or (3) permanent ground subsidence.

Public/agency comments from the Center for Biological Diversity and Defenders of Wildlife were also received on this issue. These comments identified similar concerns as described above regarding potential impacts to groundwater levels and related groundwater-dependent vegetation from Project groundwater extraction.

The maximum predicted water table drawdown associated with the Project is approximately 7 to 11 feet in the vicinity of the pumping wells, and the area where projected drawdown exceeds 1 foot extends approximately 1 to 3 miles from the Project ROW. (Ex. 301, pp. C.9-46, C.9-48 - **Soil and Water Resources Table 15**). Given these projections and the current understanding of local hydrogeology and associated existing wells that may be affected by Project-induced drawdown, it is unlikely that Project groundwater pumping would cause any nearby wells to go dry or be severely impaired or rendered unusable. The evidence indicates, however, that impact quantifications based on preliminary studies and calculations are approximate, and actual impacts would not be accurately quantified until the occurrence of long-term groundwater production. (Ex. 301, pp. C.9-46, C.9-47.) We therefore adopt Conditions of Certification **SOIL & WATER-2** through **SOIL & WATER-5** and **SOIL & WATER-15** to address potential Project-related impacts to groundwater levels and associated wells through efforts such as proper well installation/operation, production metering, monitoring/reporting, and provision of appropriate compensation to affected well owners. Implementation of these Conditions of Certification is expected to reduce potential Project-related impacts to groundwater levels and wells below a level of significance.

[2] Phreatophytes are generally defined as deep-rooted plants that obtain a significant portion of their water needs from groundwater.

The nearest potential phreatophytes are located near Palen Dry Lake. Preliminary estimates indicate an approximate groundwater level decline of approximately 0.1 to 5 feet in the intervening area, which could adversely affect groundwater-dependent vegetation. As described in the **Biological Resources** section of this Decision, groundwater monitoring and (if needed) remedial action and compensatory mitigation have been identified to address these potential concerns as set forth in Conditions of Certification **BIO-23** and **BIO-24**. Implementation of these measures would reduce associated impacts to groundwater-dependent plant communities to less than significant levels.

According to the National Water Information System (NWIS) database of U.S. water sources, nine "surface water sites" (including streams, ponds and springs) are located within approximately 14 miles of the Project site. The closest of these is Corn Spring, which is approximately six miles southwest of the Project site in the center of the Chuckwalla Mountains. The spring discharges into Corn Spring Wash, an ephemeral dry wash that extends northeast towards the Project site. Corn Spring appears to derive its water from precipitation in the Chuckwalla Mountains, as well as movement of groundwater under pressure along an historic fault that bisects the mountains. (Ex. 301, pp. C.9-31 - C.9-33.) Based on the described location of "surface water sites" relative to the Project, the associated physiographic and geologic conditions, and the information and Conditions of Certification previously identified in association with proposed Project groundwater use, no significant impacts related to "surface water sites" are expected from Project groundwater pumping.

Permanent ground subsidence can occur when water pressures in groundwater aquifers fall below their lowest historical point, and the particles in the aquifer skeleton are permanently rearranged and compressed. This type of deformation is most prevalent when confined alluvial aquifer systems are overdrafted. Based on the previously described groundwater conditions and proposed Project-related pumping, the potential for this type of permanent subsidence from Project groundwater use is believed to be remote. It is recommended, however, that a monitoring and mitigation program be implemented to assess long term changes that may occur as a result of groundwater pumping in the area. Accordingly, we adopt Condition of Certification **SOIL & WATER-16** to implement a Subsidence Monitoring Plan and, if applicable, a related Mitigation Action Plan to address any potential impacts associated with ground subsidence resulting from groundwater pumping. Implementation of this Condition of Certification would reduce associated potential impacts from groundwater-related subsidence to less than significant levels. (Ex. 301, pp. C.9-46, C.9-47.)

6. Groundwater Quality

a. Construction Impacts

Potential impacts to groundwater quality during construction could potentially result from the release of construction-related contaminated or hazardous materials, and their subsequent migration to the groundwater table. Based on the depth of the local groundwater table (approximately 180 feet or more below the surface), as well as the fact that a hazardous material management plan would be implemented during construction per Conditions of Certification **HAZ-1** and **HAZ-2**, potential impacts to groundwater quality during Project construction are expected to be less than significant (refer to the **Hazardous Materials Management** section of this Decision for additional information).

b. Operational Impacts

Potential impacts to groundwater quality during Project operation are associated with long-term groundwater production, and the proposed on-site use of evaporation ponds, a Land Treatment Unit (LTU), and septic systems, as outlined below. An additional potential concern regarding groundwater quality involves the proposed use of local groundwater aquifers to provide domestic water for Project-related uses.

1) Groundwater Production

Long-term Project-related groundwater extraction could potentially induce the vertical flow of high-saline groundwater from beneath Palen Dry Lake to lower aquifers (being used for water production) located beneath the site. While no significant differential in groundwater quality has been identified beneath the Project site, a hypothetical analysis was conducted by the Project applicant wherein high-saline groundwater is present beneath Palen Dry Lake, and the proposed Project production wells would induce a gradient towards the production wells. Using variable values of hydraulic conductivity based on site specific data, the analysis indicates that between approximately 43 and 4,424 years would be required for groundwater to flow from beneath Palen Dry Lake to the Project wells. Given that there are probably low permeability sediments present beneath Palen Dry Lake and the analysis did not take into consideration retardation, dispersion, dilution and/or interference from other producers, it is unlikely that significant vertical migration of poor quality water would migrate and degrade higher quality portions of the aquifer. Due to the uncertainties

associated with the available information regarding shallow groundwater quality and vertical migration, however, we adopt Conditions of Certification **SOIL & WATER-2** through **SOIL & WATER-5** (as previously described) and **SOIL & WATER-18** to conduct groundwater monitoring and address associated potential water quality impacts. Implementation of these Conditions of Certification would reduce associated potential water quality impacts from groundwater production to less than significant levels. (Ex. 301, pp. C.9-49, C.9-50.)

2) Evaporation Ponds

Each of the proposed 250 MW units would have two 4-acre evaporation ponds to dispose of wastewater from sources including auxiliary equipment cooling tower and boiler blowdown (for a total of 8 acres per unit, or 16 acres for the entire Project site). The ponds would include double linings, consisting of a 60-mil high density Polyethylene (HDPE) primary liner and a 40-mil secondary HDPE liner. Drainage facilities and collection piping comprising part of the proposed leachate detection system (LDS) would be located between the liners, and a hard surface (e.g., roller-compacted concrete) would be installed on top of the 60-mil liner to provide protection against damage from falling objects, varying climatic conditions, and maintenance activities. The ponds would be designed and permitted as Class II Surface Impoundments in accordance with applicable regulatory requirements. Multiple ponds are planned to allow continued plant operations during activities such as pond maintenance. Pond dimensions would be designed to provide adequate surface area and depth to accommodate proposed wastewater inflow and precipitation rates over the life of the Project (approximately 30 years), as well as to provide adequate freeboard for direct precipitation from large storm events (i.e., to prevent overflow).

The precipitated solids would be sampled and analyzed to meet the characterization requirements of the receiving disposal facility, with the nature of the solids to determine the transportation and disposal methodology. It is anticipated that the pond solids and other non-hazardous wastes would be classified as Class II Designated Waste, a non-hazardous industrial waste, with this characterization to be verified by the Project owner prior to disposal. The total amount of solids anticipated to accumulate in the ponds over the 30-year Project life is approximately 6,400 tons. Monitoring of the evaporation ponds would be required during Project operation to detect the presence of liquid and/or solid constituents of concern, which are anticipated to include chloride, sodium, sulfate, total dissolved solids (TDS), biphenyl diphenyl oxide, potassium, selenium, and phosphate. (Ex. 301, p. C.9-50.)

Based on the described design criteria and monitoring program, as well as the additional requirements identified in **SOIL & WATER-6** and **SOIL & WATER-18** (which mandate compliance with applicable waste discharge standards and implementation of an approved Groundwater Quality Monitoring and Reporting Plan, respectively), potential groundwater quality impacts associated with the evaporation ponds are expected to be less than significant.

3) Land Treatment Unit

The Project site would include a land treatment unit (LTU) to treat soil that may be impacted by minor leaks or spills of heat transfer fluid (HTF) during daily operation and maintenance activities. The proposed HTF at the PSPP facility is Therminol® VP1, a synthetic oil comprised of diphenyl ether and biphenyl. The LTU would include a two-foot-thick clay layer on the floor (underlain by three feet of native soil compacted to 95 percent relative compaction) that would serve as a protective barrier to the downward movement of contaminants. The LTU would also be surrounded on all four sides by minimum 2-foot high berms that would protect the facility from surface water inflow from up to a 100-year flood event. At ambient temperatures, the HTF is highly viscous and virtually insoluble in water. Accordingly, the HTF is not likely to mobilize from the soil downwards to the water table, which is approximately 180 feet or more beneath the surface at the Project site. The LTU would be operated in accordance with applicable regulatory requirements (including 23 CCR, Div. 3, Chptr. 15; 27 CCR § 2000 et seq.; and 23 CCR § 2510 et seq.), and is not expected to impact surface water or groundwater quality beneath the site. (Ex. 301, p. C.9-51.)

Based on the described conditions, as well as the requirements set forth in Conditions of Certification **SOIL & WATER-6** and **SOIL & WATER-18** (as previously described), operation of project LTU is not expected to result in significant impacts to groundwater quality.

4) Septic Systems

Individual septic systems and leach fields are planned for each of the two independent solar units, as well as the Project administrative, warehouse, and control room facilities. The use and application of septic systems is a long established practice as a method of wastewater treatment. The proposed septic systems would be installed approximately five to six feet deep. The closest privately owned off-site parcel to the proposed septic fields is in excess of one-half mile away, and the septic systems would have no effect on surface water in or around the Project site. (Ex. 301, pp. C.9-51, C.9-52.)

The proposed septic systems and leach fields for the Project site are hydraulically down-gradient from the nearest off-site wells, and are therefore not expected to result in any associated impacts to groundwater quality. The County of Riverside has adopted a number of setback requirements for septic systems and leach fields, including: (1) a minimum 50-foot horizontal setback from the nearest water supply well; and (2) a minimum 5-foot vertical separation from the groundwater table. (Ex. 301, pp. C.9-51, C.9-52.) The proposed Project systems would exceed these requirements, with related setbacks including approximately 1.1 miles from the nearest existing water supply well, and approximately 175 feet or more from the local water table.

A Public/agency comment on this issue was also received from the County of Riverside Department of Environmental Health. This comment noted that advanced treatment could potentially be required for Project septic systems/leach fields by the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) to reduce the level of contaminants including nitrates, biochemical oxygen demand (BOD) and pathogens. However, because the proposed systems are below the identified threshold of 5,000 gpd established by the CRBRWQCB, they would be subject to a related exclusion from CRBRWQCB requirements. (Ex. 301, pp. C.9-105, C.9-106.)

Preliminary studies conducted for the proposed Project septic systems show that there is a low potential for related impacts to local groundwater quality. The evidence indicates some uncertainty due to the preliminary nature of these analyses, however, and a number of measures are identified to address the associated potential impacts. Specifically, these include Conditions of Certification **SOIL & WATER-6**, **SOIL & WATER-7** and **SOIL & WATER-18**, which we hereby adopt. These measures require conformance with applicable waste discharge standards and Riverside County septic system/leach field standards, as well as an approved Groundwater Quality Monitoring and Reporting Plan. Implementation of the noted Project design measures, as well as the listed Conditions of Certification, would be expected to reduce potential groundwater quality impacts from proposed septic system and leach field facilities below a level of significance.

5) Domestic Water Use

Water supplies for all proposed uses associated with Project operation (including domestic/consumptive uses) would be derived from on-site groundwater supply wells. Based on available data, the evidence indicates that existing groundwater quality in the immediate Project site vicinity would not meet drinking water quality

standards without treatment, due to relatively high levels of TDS, fluoride, chloride, boron, and sulfate. (Ex. 301, pp. C.9-28 - C.9-30.) A related public/agency comment on this issue was received from the County of Riverside Department of Environmental Health. This comment noted that the Project water system would be classified as a "non-community, non-transient domestic water system", and would therefore be required to meet all applicable federal and state water quality standards. Based on the described water quality and regulatory considerations, we adopt Staff-recommended Condition of Certification **SOIL & WATER-19** to address related potential concerns and ensure conformance with applicable standards regarding the Project water system. Implementation of this condition is expected to reduce potential impacts related to the proposed Project water system below a level of significance.

7. Surface Hydrology, Storm Water Management, and Flooding

a. Surface Hydrology/Storm Water Management

The climate in the Project site vicinity is characterized by high aridity and low precipitation, with very hot summers and relatively cold, dry winters. Average annual precipitation in the Project area (based on data from at the Blythe Airport) is approximately 3.6 inches, with most rainfall occurring during the winter months or in association with summer tropical storms (which tend to be of shorter duration and higher intensity than winter storms). Based on the noted conditions, local drainage is intermittent, with flows limited to infrequent storm event runoff in otherwise dry (ephemeral) washes. Surface drainage in the western portion of the Chuckwalla Valley Drainage Basin (including the Project site) flows generally to Palen Dry Lake, which is a "wet playa" (i.e., with groundwater occurring at or near the surface). Project site runoff is conveyed as sheet flow and through a number of ephemeral washes, with approximately 100 minor washes crossing the site from southwest to northeast. These (and other) washes drain off-site areas south of I-10 and flow towards Palen Dry Lake. Many of these channels do not reach the dry lake, but fade out on the vegetated sand dune surfaces.

There are two more significant ephemeral wash complexes that cross the site from southwest to northeast and flow towards Palen Dry Lake as noted above. These major washes encompass complexes of braided channels, with each channel being approximately 10 to 50 feet wide. The wash complexes widen out from their constriction at I-10 and reach approximately 1,500 feet in width within one mile, after which they become very dispersed, lose definition and resemble minor washes. I-10 is an important local control on drainage across the Project site, as it intercepts a large number of ephemeral washes draining towards the

site from upstream (off-site) areas. These channels are captured by a series of berms and interceptor channels that run parallel to I-10, periodically passing the collected water under the freeway at bridges and creating larger washes. There are three distinct locations where this occurs upstream of the project, with associated flows relatively concentrated near the southern project boundary, but quickly dispersing into a network of smaller and less defined channels as described (Ex. 301, pp. C.9-31 - C.9-34.)

All existing washes and floodplains within the Project boundary will be completely eliminated by the grading of approximately 4,000 acres to provide the flat, uniform and vegetation-free topography required for the construction and operation of the solar mirror array. Potential Project-related impacts to local surface water hydrology are directly related to proposed on-site grading and the construction and operation of a network of engineered collector/conveyance channels. These channels would be designed for the purpose of protecting the Project from flooding and erosion related to the conveyance of runoff from off-site watersheds across the Project site. On-site runoff would be controlled through appropriate grading and a network of engineered channels designed to collect and convey flow through the Project site for discharge to one of the larger peripheral channels which ultimately discharge off-site. The Project would change both the extent and physical characteristics of the existing floodplain within and downstream of the Project site, as well as changing the on-site sediment transport and depositional characteristics.

Engineered drainage channels would be constructed along the Project boundary wherever the potential for the interception of off-site surface flows exists. These channels would intercept off-site flows and convey them around and through the Project site for discharge at discreet locations along the northern (downstream) Project boundary. Discharge of flow along the downstream Project site boundary would be through the use of “fan and lateral diffuser” structures, which would be designed to reduce velocities and allow flows to spread out in a manner that mimics the existing downstream sheet flow conditions.

Releasing flow back to native ground at in a manner similar to existing conditions is of concern for two primary reasons. The first is that flow collected from a large area and discharged in a more concentrated area may result in the potential for increased erosion. The second potential concern is that a substantial change in flow patterns could essentially “dry-up” discrete areas downstream of the Project site, potentially resulting in significant impacts to existing biological resources (refer to the **Biological Resources** section of this Decision for additional discussion). (Ex. 301, pp. C.9-53, C.9-54.)

The Project Drainage Report, Ex. 6, concludes that pre- and post-development discharges at the downstream project boundary would be very similar, although the distribution of these flows would vary significantly for the pre- and post-development conditions. (Ex. 301, p. C.9-53.) The evidence indicates, however, that the potential exists for an increase of flows from the project site during more frequent storm events, due to soil compaction and a more efficient drainage system. Additionally, staff review of the Project Drainage Report identified a number of potential inconsistencies with factors including the Curve Number (CN) used for developed conditions (per the Riverside County Hydrology Manual), and the Hydraulic Engineering Center-Hydrologic Modeling System (HEC-HMS) approach and results. Accordingly, it has been determined that additional review is warranted, and Staff-recommended Condition of Certification **SOIL & WATER-8** is hereby adopted to ensure that the issue of on-site runoff calculations is adequately studied using appropriate regional hydrologic parameters.

An additional concern is that flow from the Corn Spring watershed appears to have the potential to break over into the adjacent watershed to the east, which could potentially increase the flow entering the Project site center channel. Engineered drainage channels will be constructed along the project boundary wherever the detailed FLO-2D analysis (as required by Condition of Certification **SOIL&WATER-9**) indicates the potential for the interception of offsite surface flows exists. These channels will intercept offsite flows and convey them around and through the project for discharge along the northern project boundary. Onsite flows would be discharged into these major channels at discrete locations.

Implementation of Conditions of Certification **SOIL & WATER-8** and **SOIL & WATER-9** is expected to reduce potential impacts related to surface hydrology/storm water management below a level of significance.

b. Drainage Alteration

All existing washes and floodplains within the Project site boundary would be completely eliminated by the proposed grading of approximately 4000 acres to accommodate Project construction and operation. Existing natural drainage features would be replaced with a system of constructed swales and channels designed to collect and convey on-site flows to designated points of discharge from the Project. On-site storm water from the Project would be discharged directly offsite without the use of detention basins or any other means to capture, control, or retain on-site flows. Based on the described conditions, the overall

impact to on-site drainage patterns from implementation of the proposed Project would be significant. (Ex. 301, p. C.9-54.)

The Project would not directly impact existing natural drainage features upstream of the Project boundary, as no diversions, basins, dams or other surface water controls are proposed in upstream areas. Some potential exists for erosion in upstream areas, however, due to the possible formation of headcuts[3] which could migrate laterally from the engineered channels if they are not stabilized and protected.

No physical modifications are proposed to natural drainage features located downstream of the Project site boundary. The Project would, however, potentially affect downstream drainage due to proposed changes to both existing drainage patterns and sediment transport characteristics in upstream (on-site) areas. Accordingly, certain downstream areas would receive more flow than under existing conditions, while other areas may no longer receive any surface flow beyond that from direct precipitation. The resulting concentration of flows at proposed diffuser structures may also increase erosion potential.

Within the gen-tie corridor, localized grading would likely occur at a number of drainages to allow vehicular access during construction and operation, and diversion and/or channelization of existing drainages could occur. Such grading activities can impact off-site portions of the drainages if impacted areas are not properly stabilized.

Public/agency comments on this issue were also received from the U.S. EPA. These comments requested demonstration that downstream flows would not be disrupted from proposed drainage alteration, as well as discussion on the feasibility of using existing on-site drainage channels and more natural drainage-related features. (Ex. 301, pp. C.9-108, C.9-109.)

The assessment of potential Project-related impacts to existing surface flow patterns requires a detailed analysis using a FLO-2D or similar model to clearly delineate the pre- and post-project conditions. Information obtained from such an analysis is critical to assess the extent and adequacy of the proposed flood control measures on the southern and western Project boundaries, as well as along the downstream Project boundary where flow is released into the

[3] A headcut is generally defined as a vertical face or drop in the bed of a stream channel. As water flows over such features, erosion can occur at the toe (or bottom) of the headcut, eventually causing instability and resulting in portions of the vertical face sloughing off (with the headcut thereby migrating upstream).

engineered channels. The evidence indicates that some uncertainty exists regarding the methodology and results of the pre- and post-development FLO-2D data submitted by the Project Applicant. Accordingly, we adopt Conditions of Certification **SOIL & WATER-8** through **SOIL & WATER-11** to address these concerns. Implementation of these Conditions of Certification would be expected to reduce all potential Project-related impacts to surface drainage below a level of significance.

c. Flood Hazards

The Project would be protected from off-site flooding hazards through the construction of engineered channels along the upstream Project site boundaries. These channels would capture and convey 100-year (and smaller) storm flows through and around the Project site and discharge it along the downstream (northern) Project boundary. Analyses of proposed collector and conveyance channel design and performance was conducted for the Project, including preliminary plan and profile layout and hydraulic analysis using the Hydraulic Engineering Center-River Analysis System (HEC-RAS) computer program and Preliminary Civil Construction Plans. The evidence indicates, however, that some uncertainty exists for considerations including: (1) inconsistencies between plan views, profiles and sections, including how the engineered collector channels would tie into existing grade; (2) how the proposed berm on the outside of the western drainage channel would function, and how it would be protected from erosion along its face and at the proposed openings where concentrated flows would enter the channel; (3) the use of berms in lieu of soil cement bank protection, due to the tendency of berms to fail during large events leaving unprotected channel banks at risk for serious erosion and headcutting; (4) the locations of the berm openings, as these types of features are generally subject to local scour and undercutting and tend to be damaged during large flow events; and (5) proposed slope gradients in areas of proposed soil cement bank and slope protection. (Ex. 301, pp. C.9-55 - C.9-57.)

During operation, the proposed collector and conveyance channel along the western Project boundary would be exposed to incoming side flows along much of its extent. These inflows would include concentrated runoff at the more defined drainages, shallow sheet flow, and smaller localized flows. All of these elements have the ability to cause significant erosion of unprotected channel banks and result in headcutting (which could potentially extend several hundred feet upstream).

On the southern project boundary, flows from a large wash crossing under I-10 would be guided though a large culvert crossing into the Center Channel near the southern portion of the project. This type of transition and redirection of flow has the potential for both increased erosion and sediment deposition. The Preliminary Civil Construction Plans indicate that the southern extent of the improvements would be raised above existing grade and the resultant slope protected with soil cement. Some uncertainty exists, however, regarding characterization of the extents, depths and velocities of flow approaching the southern Project boundary, and how these flows would effectively be collected and conveyed in the Central Channel.

Operation of the proposed channels and erosion mitigation measures would require significant inspection and maintenance over the life of the facility to ensure that the channels are operating as intended, and that potential and observed erosion issues are addressed promptly to minimize damage to the facility and areas beyond the Project boundary. The Applicant has prepared a Draft Channel Maintenance Plan which addresses some of the potential issues associated with long term operation of the channels, although some uncertainty exists regarding the issues off-site flow collection and the use of soil cement in areas subject to inflows from off-site watersheds. The document also references the use of riprap for erosion mitigation which should not be allowed on the project due to its incompatibility with biological resources in the area (refer to the **BIOLOGICAL RESOURCES** portion of this Decision for additional discussion). (Ex. 301, pp. C.9-55 - C.9-59.)

Based on the above described conditions, we adopt Conditions of Certification **SOIL & WATER-1** and **SOIL & WATER-8** through **SOIL & WATER-12** (as previously described) to address the identified concerns. Implementation of these measures is anticipated to minimize impacts related to flood hazards and erosion associated with construction and operation of the Project to below the level of significance. They would also provide the basic information to assist the CPM to adequately review and assess the appropriateness of the proposed design within the context of the site-specific conditions.

8. Surface Water Quality

Potential Project-related impacts to surface water quality would be associated with both construction and operation activities. Water quality impacts during construction would be related to potential erosion and the associated increase of sediment loads in adjacent streams and washes, as well as accidental leaks or spills of materials such as hydrocarbon fuels/greases, solvents, paints, and

concrete. The Project applicant proposes to implement appropriate BMPs for managing potential construction-related impacts to surface water quality. This would include implementing applicable elements of the DESCP required under previously described Conditions of Certification **SOIL & WATER-1**, **HAZ-1** and **HAZ-2**.

Potential impacts to surface water quality during Project operation include erosion and increases in sediment loads to adjacent washes; accidental spills of hydrocarbon fuels and greases (including HTF fluid); and accidental releases from the LTU and evaporation ponds (refer to the above discussion under Item 6, Groundwater Quality, for additional description of the LTU and evaporation pond facilities). Potential erosion and sedimentation impacts during Project operation would be addressed through applicable elements of previously described Condition of Certification **SOIL & WATER-1**. Potential impacts related to accidental spills and releases would be managed through: (1) appropriate Project design features (e.g., providing two feet of freeboard in evaporation ponds to minimize potential overtopping during larger storm events); (2) hazardous materials management requirements (refer to the Hazardous Materials Management section of this Decision); and (3) implementation of pertinent elements of previously described Condition of Certification **SOIL & WATER-6**.

We find that no significant impacts related to surface water quality are anticipated from Project construction and operation. (Ex. 301, p. C.9-60.) Implementation of Conditions of Certification **SOIL & WATER-1**, **SOIL & WATER-6**, **HAZ-1** and **HAZ-2** is expected to further reduce the possibility of potential Project-related impacts to surface water quality.

9. Project-related Future Actions

If the proposed Project is approved and constructed, the previously described SCE Red Bluff Substation would be a reasonably foreseeable project. This substation would provide interconnections between the proposed Project and other renewable projects in the Desert Center area, and allow the associated electricity to be carried by the Devers-Palo Verde No. 1 (DPV1) 500 kV transmission line. The SCE Red Bluff Substation project, if implemented, would be fully evaluated by the BLM and the CPUC. For informational purposes, we provide the following brief analysis of that project.

The Red Bluff Substation site includes approximately 90 acres located south of I-10 and southeast of Desert Center, within an existing CDCA utility corridor (and adjacent to the existing DPV1 500-kV transmission line). Substation components

would include 230-kV and 500-kV lines and transformer banks, associated switch racks, and a microwave tower. (Ex. 301, p. C.9-76.)

a. Environmental Setting

1) Soils

The substation project would occur along a gently sloping and dissected alluvial fan in Chuckwalla Valley. The primary soils within the region are associated with the Cherioni-Hyder-Cipriano soil mapping unit, and are generally characterized by gravelly fine sandy loam, extremely gravelly sandy loam, and very gravelly loam. These types of typically low-density and sandy soils generally exhibit high potentials for wind and water erosion. (Ex. 301, p. C.9-77.)

2) Surface Water Resources

Streams and watercourses in the substation vicinity are primarily ephemeral desert washes, with surface flows typically present only during larger rainfall events (particularly the short, torrential rains that occur in the summer). The desert washes are typically sandy or rocky bed streams that may include desert riparian vegetation. The washes can be very numerous across the alluvial plains downstream of desert mountains, as is the case in the Red Bluff Substation area. Flow in these types of washes is typically heavily laden with sediment, and erosion of the wash banks and shifting of channel beds is common. Surveys would be conducted prior to development to identify any wetlands or Waters of the U.S. that would be subject to federal regulation. (*Id*.)

3) Groundwater Resources

The Red Bluff Substation is underlain by the CVGB, with this basin and related information described above under Item 4, Groundwater Basin Balance.

b. Environmental Impacts and Mitigation

The Red Bluff Substation would likely require substantial grading and new or re-developed access roads. A portion of the 90-acre Red Bluff Substation would consist of impervious materials such as concrete foundations and asphalt-concrete paving.

1) Soils

Construction activities would involve earth disturbance that would increase the potential for erosion, including increased soil loss and sediment yields downstream from disturbed areas. Minimal post-construction erosion would be expected, as potential disturbance would generally be limited to periodic inspection and as-needed maintenance activities. Potential impacts to the project may be caused by flash floods in the existing channels.

Mitigation for potential erosion impacts would involve implementing an approved SWPPP under NPDES requirements, as well as additional measures that may be mandated by the BLM. Specifically, these measures may include erosion control efforts such as minimizing grading and preserving existing vegetation, as well as sediment control practices including the use of temporary vegetation (e.g., hydroseed), fiber rolls and sediment basins. It is expected that implementation of appropriate erosion and sediment control BMPs as part of, and in conformance with, applicable NPDES and other requirements would ensure less than significant impacts to soils associated with substation construction. (Ex. 301, p. C.9-78.)

2) Water Resources

Construction activities associated with new structures would not occur within any watercourses, and impacts to water quality from construction and operation of the substation would be less than significant with implementation of BMPs as part of a SWPPP. Specific measures would likely include standard requirements such as proper storage/handling and containment of potentially hazardous pollutants (e.g., fuels and greases), regular vehicle maintenance, and control/treatment of non-storm water flows (e.g., concrete wastes/washout). Groundwater resources would not be impacted during construction because water tables would be located below excavation/grading depths. The described types of BMPs related to surface water quality would also ensure that contaminants would not enter the groundwater supply. (*Id*.)

Accidental spills or disposal of potentially harmful materials such as diesel fuel, gasoline, lubrication oil, greases, and other substances could also occur during substation operation. The transport, use, handling and storage of such potential contaminants, as well as contingency requirements for spill response and cleanup activities, would be subject to applicable requirements of regulatory agencies potentially including the BLM, County of Riverside and CRBRWQCB. Implementation of appropriate measures as part of, and in conformance with,

these regulatory requirements would ensure less than significant impacts to water quality in association with substation operation. (Ex. 301, pp. C.9-78 – C.9-79.)

Construction and operation of the planned SCE Red Bluff Substation could potentially result in significant impacts to soil and water resources from issues including erosion and the discharge of contaminants. These potential impacts would be addressed through similar measures as described for the proposed Project, including conformance with applicable regulatory requirements. Based on this assumed conformance, it is anticipated that potential impacts to soil and water issues from the planned substation project would be reduced below a level of significance.

10. Alternatives

Staff considered a number of alternatives in the RSA. (Ex. 301, pp. C.9-61 – C.9-76.) Two of those alternatives which would use the same site as the proposed project, the Reconfigured Alternative and the Reduced Acreage Alternative, would have impacts on Soil and Water Resources similar to those of the proposed project. However, Reconfigured Alternatives #2 and #3, also on the same site, were developed by the Applicant for the purpose of reducing project impacts to the sand transport corridor on the north and northeast border of the site. Implementation of either of those alternatives will significantly reduce impacts to biological resources, primarily Mojave Fringe-toed Lizard, and for that reason we have adopted those alternatives as the preferred configurations for the project. Either of those alternatives will reduce the impacts to sand transport compared with the proposed project. (Ex. 313.) With the mitigation measures we have adopted in the **Biological Resources** section of this Decision, impacts to sand transport will be reduced below the level of significance.

11. Cumulative Impacts

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (14 Cal. Code Regs., § 15065[A] [3].) The discussion of cumulative impacts should be guided by standards of practicality and reasonableness. (14 Cal. Code Regs., 14, § 15130[b].)

Construction and operation of the proposed Project would result in both temporary and permanent changes at the Project site. A number of past, present and future foreseeable projects (cumulative projects) were identified for the assessment of potential cumulative impacts, including the proposed Project. A summary of potential cumulative impacts to soil and water resources from past, present and future foreseeable projects is provided below.

a. Soil Erosion

Construction and operation of the proposed Project would result in both short- and long-term changes at the Project site which could incrementally increase local soil erosion and storm water runoff. The proposed Project would be expected to contribute only a small amount to the potential cumulative impacts related to soil erosion, however, as the Project Applicant would be required to implement applicable mitigation measures that are expected to reduce erosion impacts below a level of significance (including Condition of Certification **SOIL & WATER-1)**. (Ex. 301, p. C.9-82.)

b. Geomorphology

There is a concern that implementation of the identified cumulative projects (including the proposed Project) could have a cumulative impact on the regionally significant geomorphic processes that transport sand downwind along the Chuckwalla Valley and to the Colorado River. Blocking or disrupting the sand transport corridors would impact various sites that provide habitat for biological resources. Additional discussion of potential cumulative impacts related to geomorphic processes is provided in the **Biological Resources** section of this Decision. (Ex. 301, p. C.9-84.)

c. Groundwater Basin Balance

As previously described, a positive balance of approximately 2,600 afy currently exists for the CVGB under average conditions. Estimated groundwater extraction from the CVGB for the cumulative projects (including the proposed Project) is anticipated to peak at 3,352 afy in Year 2011, and decrease to 2,955 afy in 2013. This would result in overdraft conditions for the CVGB beginning in Year 2011. Anticipated groundwater extraction during operation of the cumulative projects (including the proposed Project) is approximately 8,606 afy in Year 2014, which would exceed the existing basin balance and place the CVGB in overdraft for seven years. (Ex. 301, p. C.9-84.)

Based on an estimated storage capacity of 15 million af for the CVGB, cumulative construction groundwater extraction for the proposed Project and the cumulative projects would be approximately 0.01 percent of the total stored groundwater. Based on the incremental amount of anticipated groundwater use, no associated significant impacts would result and Project construction-related groundwater extraction would not be cumulatively considerable.

Total groundwater extracted from the CVGB over the life of the cumulative projects (including the proposed Project) would be approximately 57,403 af. This would represent approximately 0.4 percent of the total estimated groundwater in storage in the basin. Based on the incremental amount of anticipated groundwater extraction, no associated significant impacts would result and Project operational groundwater extraction would not be cumulatively considerable. (Ex. 301, p. C.9-85.)

The I-10 corridor within the CVGB has been targeted for additional renewable energy projects that have not been identified or quantified as to the quantity of water required for development. Given that perennial surface water sources are non-existent and the only available water source is groundwater, it is likely that these as yet unidentified projects could further develop the groundwater resources and exacerbate the cumulative overdraft conditions identified above. Given the 15 million af of total recoverable groundwater in storage, however, the associated impacts would be less than significant. (Ex. 301, p. C.9-85.)

A public/agency comment from Kaiser Ventures LLC was also received on this issue. This comment, which originated for the Genesis Solar Power Project but is also applicable to the PSPP, identified an additional cumulative project, the Eagle Mountain Landfill. Based on the nature and location of this proposed landfill project, it was incorporated into the cumulative project list for the PSPP analysis.

d. Groundwater Levels

Groundwater modeling conducted for the cumulative projects (including the proposed Project) suggests that, during the life of these projects, groundwater level declines between 1 and 5 feet or more would occur at a distance of approximately 1 to 2 miles from the Project site. (Ex. 301, p.C.9-86.) Because the closest existing well is located within approximately 2 miles of the Project site, associated potential impacts to water levels in existing wells are assumed to be cumulatively significant and would require monitoring and (if appropriate) mitigation. Implementation of Condition of Certification **SOIL & WATER-4** is anticipated to reduce Project-related impacts to groundwater levels below a level

of significance, and Project impacts to groundwater levels would therefore not be cumulatively considerable. (Ex. 301, p. C.9-86.)

e. Groundwater Quality

Significant cumulative groundwater quality impacts could potentially occur during construction and/or operation of the cumulative projects if associated contaminated or hazardous materials were to be released and migrate to the groundwater table.

The proposed Project would be expected to contribute only a small amount to potential short- or long-term cumulative groundwater quality impacts, based on the following considerations: (1) the groundwater table at the Project site is located approximately 180 feet or more below the surface; (2) Project construction and operation would require implementation of a hazardous material management plan; and (3) operation of the LTU, evaporation ponds and, septic systems would require applicable monitoring plans as previously described. With implementation of these measures, potential impacts to groundwater quality from the proposed Project would not be cumulatively considerable. (Ex. 301, p. C.9-86.)

f. Surface Water Hydrology

Potential impacts to local surface water hydrology from the cumulative projects (including the proposed Project) are directly related to proposed grading, as well as construction and operation of facilities such as pavement and flood control structures that would modify runoff rates/amounts and/or drainage patterns. Such effects would change the extent and physical characteristics of existing drainages and floodplains, both within and downstream of the associated project sites. In addition, modification of surface hydrologic conditions could potentially change the sediment transport and depositional characteristics of the related sites. (Ex. 301, p. C.9-88.)

Based on the implementation of previously identified Conditions of Certification related to this issue, potential impacts to surface water hydrology from the proposed Project are not expected to be cumulatively considerable.

g. Surface Water Quality

Potential impacts to surface water quality from the cumulative projects (including the proposed Project) are associated with both construction and operation

activities. Water quality impacts during construction would be related to potential erosion and the associated increase of sediment loads in adjacent streams and washes, as well as accidental leaks or spills of materials such as hydrocarbon fuels/greases, solvents, paints, and concrete. Potential impacts to surface water quality during operation include erosion and increases in sediment loads to adjacent washes, as well as accidental spills/releases of substances such as hydrocarbons (e.g., fuels and HTF fluid) and wastewater.

The proposed Project would implement appropriate Conditions of Certification for managing potential construction- and operation-related impacts to surface water quality, as previously described. As a result, Project-related impacts to surface water quality are expected to be less than significant. While design and mitigation for surface water quality impacts from the cumulative projects cannot be determined at this time, it is likely that such impacts would be subject to similar measures as identified for the proposed Project. Accordingly, potential impacts to surface water quality from the proposed Project are not expected to be cumulatively considerable. (Ex. 301, p. C.9-88.)

h. Decommissioning

Decommissioning of the proposed Project is expected to result in potential impacts related to soils and water resources similar to those identified for Project construction. It is considered unlikely that the construction or decommissioning of any of the cumulative projects would occur concurrently with decommissioning of the proposed Project, as this decommissioning is not expected to occur for approximately 40 years. Accordingly, potential impacts related to soil and water resources from decommissioning of the proposed Project are not expected to be cumulatively considerable. To ensure that potential impacts to soil and water resources during and after project decommissioning are adequately addressed, the applicant would be required to comply with Condition of Certification **SOIL&WATER-13**, which requires implementation of an approved Closure and Decommissioning Plan. (*Id*.)

12. Compliance with LORS

Staff, in the RSA, set forth a detailed analysis of the Project's compliance with applicable LORS. (Ex. 301, pp. C.9-89 – C.9-104.) As a dry-cooled project, PSPP will be in conformity with state water use policy by using the least amount of the lowest-quality water feasible. On the basis of this analysis, we find that the

evidence supports our conclusion that the PSPP will comply with all applicable LORS through implementation of the Conditions of Certification we adopt herein.

FINDINGS OF FACT

1. Total grading at the PSPP site will encompass approximately 4.5 million cubic yards of soil, and Project implementation will potentially result in short- and long-term erosion/sedimentation impacts.

2. Implementation of Reconfigured Alternatives #2 or #3, and adherence to the procedures in Conditions of Certification **SOIL & WATER-1** (including the construction DESCP) and **SOIL & WATER-8** through **SOIL & WATER-12** will avoid significant soil erosion and subsequent sedimentation during construction and operation, conserve soil resources, maintain water quality, and prevent accelerated soil loss.

3. Project implementation will require approximately 1,917 afy of groundwater extraction from the CVGB during the 39-month construction period, and approximately 300 afy during Project operation. These withdrawals could potentially result in significant impacts related to groundwater resources and subsidence in the CVGB.

4. Implementation of Conditions of Certification **SOIL & WATER-2** through **SOIL & WATER-5**, **SOIL & WATER-15**, and **SOIL & WATER-16** would ensure that significant impacts to groundwater levels and subsidence in the CVGB do not occur.

5. Implementation of Conditions of Certification **SOIL & WATER-14** and **SOIL & WATER-17** would reduce potential impacts to surface waters below a level of significance (although future water use in the CVGB may be governed by impending regulations being formulated by the U.S. Bureau of Reclamation).

6. Based on the depth of the local groundwater table and the fact that a hazardous material management plan would be implemented during construction (refer to the **HAZARDOUS MATERIALS MANAGEMENT** portion of this Decision), potential short-term impacts to groundwater quality are expected to be less than significant.

7. Potential impacts related to groundwater quality during Project operation are associated with the proposed on-site use of evaporation ponds, LTUs, and septic systems, the use of local groundwater for domestic purposes (e.g., drinking water), and the potential to induce the vertical flow of high-saline groundwater from beneath Palen Dry Lake into aquifers used for water production.

8. Implementation of Conditions of Certification **SOIL & WATER-2** through **SOIL & WATER-7**, **SOIL & WATER-18**, and **SOIL & WATER-19** would reduce long-term impacts related to groundwater quality below a level of significance.

9. The proposed Project could potentially result in short- and long-term impacts to surface hydrology, storm water management and flooding as a result of on-site grading and the construction and operation of a network of engineered collector/conveyance channels.

10. Implementation of Conditions of Certification **SOIL & WATER-1** and **SOIL & WATER-8** through **SOIL & WATER-12** (along with related Conditions of Certification identified in the **BIOLOGICAL RESOURCES** portion of the Decision), would reduce short- and long-term impacts to surface hydrology, storm water management and flooding below a level of significance.

11. Project implementation would not result in significant short- or long-term impacts to surface water quality.

CONCLUSION OF LAW

1. With implementation of the Conditions of Certification listed below, the PSPP Project will comply with all applicable LORS, and will not result in any unmitigated and significant direct, indirect or cumulative adverse impacts to Soil or Water Resources.

CONDITIONS OF CERTIFICATION

DRAINAGE EROSION AND SEDIMENTATION CONTROL PLAN (DESCP)

SOIL&WATER-1 Prior to site mobilization, the project owner shall obtain the Compliance Project Manager (CPM) approval of the Drainage Erosion and Sedimentation Control Plan (DESCP) for managing stormwater during Project construction and operations as normally administered by the County of Riverside. The DESCP must ensure proper protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, include provisions for sediment and stormwater retention from both the power block, solar fields and transmission right of way to meet any Riverside County requirements, address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. The plan must also cover all linear project features such as offsite transmission mains. The DESCP shall contain, at minimum, the elements presented below that

outline site management activities and erosion and sediment-control Best Management Practices (BMP) to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.

A. Vicinity Map – A map(s), at a minimum scale 1 inch to 500 feet, shall be provided indicating the location of all Project elements (construction sites, laydown area, pipelines) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

B. Site Delineation – All areas subject to soil disturbance for the proposed Project (Project phases, laydown area, all linear facilities, landscaping areas, and any other Project elements) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

C. Watercourses and Critical Areas – The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. It shall indicate the proximity of those features to the proposed Project construction, laydown, and landscape areas and all transmission and pipeline construction corridors.

a. The DESCP shall describe how the project will avoid or minimize impacts to Palen-McCoy Valley sand corridor,

b. All proposed linear features (with the exception of Power Pylons) shall be constructed flush with the surrounding ground surface and without ground level obstructions.

D. Drainage Map – The DESCP shall provide a topographic site map(s), at a minimum scale of 1 inch to 200 feet, showing existing, interim, and proposed drainage swales and drainage systems and drainage-area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet.

E. Drainage of Project Site Narrative – The DESCP shall include a narrative of the drainage measures necessary to protect the site and potentially affected soil and water resources within the drainage downstream of the site. The narrative shall include the summary pages from the hydraulic analysis prepared by a professional engineer and erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage features.

F. Clearing and Grading Plans – The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special

features shall also be shown. Existing and proposed topography shall be illustrated by tying in proposed contours with existing topography.

G. Clearing and Grading Narrative – The DESCP shall include a table with the estimated quantities of material excavated or filled for the site and all Project elements (Project site, laydown area, transmission and pipeline corridors, roadways, and bridges) whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.

H. 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 the CPM prior to use.

I. Best Management Practices Plan – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, Project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control stormwater runoff and sediment transport.

J. Best Management Practices Narrative – The DESCP shall show the location (as identified in (I) above), timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during all Project element (site, pipelines) excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each Project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information would be available.

K. 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.

L. Erosion Control Drawings – The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion control specialist.

M. Agency Comments – The DESCP shall include copies of recommendations, conditions, and provisions from the County of Riverside, California Department of Fish and Game (CDFG), and Colorado River Basin Regional Water Quality Control Board (CRBRWQCB).

N. Monitoring Plan: Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and stormwater diversions. The monitoring plan shall be part of the Channel Monitoring and Maintenance Plan, **SOIL&WATER-12.**

Verification: No later than 30 days prior to start of site mobilization, the project owner shall submit a copy of the final DESCP to the County of Riverside, the CRBRWQCB, and the CPM for review and comment and to the County of Riverside and the CRBRWQCB if required. The CPM shall consider comments if received by the county and CRBRWQCB before approval of the DESCP.

The DESCP shall be consistent with the grading and drainage plan and relevant portions of the DESCP shall clearly show approval by the chief building official. The DESCP shall be a separate plan from the SWPPP developed in conjunction with any National Pollutant Discharge Elimination System (NPDES) permit for Construction Activity. The project owner shall provide in the monthly compliance report with a narrative 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 update and maintain the DESCP for the life of the Project and shall provide in the annual compliance report information on the results of monitoring and maintenance activities.

PROJECT GROUNDWATER WELLS, PRE-WELL INSTALLATION

SOIL&WATER-2 The project owner proposes to construct and operate up to ten (10) onsite groundwater water supply wells that produce water from the CVGB. The project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction permits and requirements. Prior to initiation of well construction activities, the project owner shall submit for review and comment a well construction packet to the County of Riverside and fees normally required for the county's well permit, with copies to the CPM. The Project shall not construct a well or extract and use groundwater until approval has been issued by the County and the CPM to construct and operate the well. Wells permitted and installed as part of pre-construction field investigations that subsequently are planned for use as project water supply wells require CPM approval prior to their use to supply water to the project.

Post-Well Installation. The project owner shall provide documentation as required under County permit conditions to the CPM that the well has been properly completed. In accordance with California's Water

Code section 13754, the driller of the well shall submit to the DWR a Well Completion Report for each well installed. The project owner shall ensure the Well Completion reports are submitted. The project owner shall ensure compliance with all county water well standards and the County requirements for the life of the wells, and shall provide the CPM with two (2) copies each of all monitoring or other reports required for compliance with the County of Riverside water well standards and operation requirements, as well as any changes made to the operation of the well.

Verification: The project owner shall do all of the following:

a. No later than 60 days prior to the construction of the onsite groundwater production wells, the project owner shall submit to the CPM a copy of the water well construction packet submitted to the County of Riverside.

b. No later than 30 days prior to the construction of the onsite groundwater production wells, the project owner shall submit a copy of written concurrence received from the County of Riverside that the proposed well construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program. The CPM will provide approval to the project owner of the well location and operation within 10 days of receipt of the County of Riverside's concurrence with the proposed well construction activities.

c. No later than 60 days after installation of each well at the Project site, the project owner shall ensure that the well driller submits a Well Completion Report to the DWR with a copy provided to the CPM. The project owner shall submit to the CPM together with the Well Completion Report a copy of well drilling logs, water quality analyses, and any inspection reports. Additionally no later than 60 days after installation of each well (including closure of any associated mud pits) the project owner shall submit documentation to the CPM and the CRBWQCB that well drilling activities were conducted in compliance with Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) and that any onsite drilling sumps used for Project drilling activities were removed in compliance with 23 CCR section 2511(c).

d. During well construction and for the operational life of the well, the project owner shall submit two copies each to the CPM of any proposed well construction or operation changes.

CONSTRUCTION AND OPERATION WATER USE

SOIL&WATER-3 The proposed Project's use of groundwater during construction shall not exceed 1,917 afy (total of 5,750 af during the 39 months) during construction and 300 afy during operation. Water quality used for project construction and operation shall be reported in accordance with Condition of Certification **SOIL&WATER-18** to ensure compliance with this condition.

Prior to the use of groundwater for construction, the project owner shall install and maintain metering devices as part of the water supply and distribution system to document Project water use and to monitor and record in gallons per day the total volume(s) of water supplied to the Project from this water source. The metering devices shall be operational for the life of the Project.

Verification: At least 60 days prior to the start of construction of the proposed Project, the project owner shall submit to the CPM a copy of evidence that metering devices have been installed and are operational.

Beginning six months after the start of construction, the project owner shall prepare a semi-annual summary of amount of water used for construction purposes. The summary shall include the monthly range and monthly average of daily water usage in gallons per day.

The project owner shall prepare an annual summary, which shall include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet. For years subsequent to the initial year of operation, the annual summary shall also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" shall correspond to the date established for the annual compliance report submittal.

GROUNDWATER LEVEL MONITORING, MITIGATION AND REPORTING

SOIL&WATER-4 The project owner shall submit a Groundwater Level Monitoring, Mitigation, and Reporting Plan to the CPM for review and approval in advance of construction activities and prior to the operation of onsite groundwater supply wells. The Groundwater Level Monitoring, Mitigation, and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and Project operation water use. The plan shall establish pre-construction and Project related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially impacted existing wells.

A. Prior to Project Construction

1. A well reconnaissance shall be conducted to investigate and document the condition of existing water supply wells located within 3 miles of the project site, provided that access is granted by the well owners. The reconnaissance shall include sending notices by registered mail to all property owners within a 3 mile radius of the project area.
2. Monitor to establish preconstruction conditions. The monitoring plan and network of monitoring wells shall make use of existing wells in the basin that would satisfy the requirements for the

monitoring program. The monitoring network shall be defined by the groundwater model developed for the AFC as the area predicted to show a water level change of 1 feet or more at the end of construction and at the end of operation and any monitoring wells that are installed to comply with Waste Discharge Requirements issued by the Energy Commission for the evaporation ponds and land treatment unit associated with the Project. The projected area of groundwater drawdown shall be refined on an annual basis during project construction and every three (3) years during project operations using the data acquired as part of Condition of Certification SOIL&WATER-4 as well as the numerical groundwater model developed as part of the AFC and subsequent Data Responses by the applicant. If the area predicted to show a water level change of 1 feet increases, the project owner will be required to submit a revised monitoring plan with additional monitoring wells (if required).

3. Identified additional wells shall be located outside of this area to serve as background monitoring wells. Abandoned wells, or wells no longer in use, that are accessible and provide reliable water level data within the potentially impacted area shall also be included as part of the monitoring network. A site reconnaissance shall be performed to identify wells that could be accessible for monitoring. As access to these wells is available, historic water level, water quality, well construction and well performance information shall be obtained for both pumping and non-pumping conditions.
4. As access allows, measure groundwater levels from the off-site and on-site wells within the network and background wells to provide initial groundwater levels for pre-project trend analysis.
5. Construct water level maps within the CVGB within 5 miles of the site from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

B. During Construction:

1. Collect water levels from wells within the monitoring network and flows from seeps and or springs on a quarterly basis throughout the construction period and at the end of the construction period. Perform statistical trend analysis for water levels. Assess the significance of an apparent trend and estimate the magnitude of that trend.

C. During Operation:

1. On a quarterly basis for the first year of operation and semi-annually thereafter for the following four years, collect water

level measurements from any wells identified in the groundwater monitoring program to evaluate operational influence from the Project. Quarterly operational parameters (i.e., pumping rate) of the water supply wells shall be monitored. Additionally, quarterly groundwater-use in the CVGB shall be estimated based on available data.

2. On an annual basis, perform statistical trend analysis for water levels data and comparison to predicted water level declines due to project pumping. Analysis of the significance of an apparent trend shall be determined and the magnitude of that trend estimated. Based on the results of the statistical trend analyses and comparison to predicted water level declines due to Project pumping, the project owner shall determine the area where the Project pumping has induced a drawdown in the water supply at a level of 5 feet or more below the baseline trend.

3. If water levels have been lowered more than 5 feet below pre-site operational trends, and monitoring data provided by the project owner show these water level changes are different from background trends and are caused by Project pumping, then the project owner shall provide mitigation to the impacted well owner(s). Mitigation shall be provided to the impacted well owners that experience 5 feet or more of Project-induced drawdown if the CPM's inspection of the well monitoring data confirms changes to water levels and water level trends relative to measured pre-project water levels, and the well (private owners well in question) yield or performance has been significantly affected by Project pumping. The type and extent of mitigation shall be determined by the amount of water level decline induced by the Project, the type of impact, and site specific well construction and water use characteristics. If an impact is determined to be caused by drawdown from more than one source, the level of mitigation provided shall be proportional to the amount of drawdown induced by the Project relative to other sources. In order to be eligible, a well owner must provide documentation of the well location and construction, including pump intake depth, and that the well was constructed and usable before Project pumping was initiated. The mitigation of impacts shall be determined as follows:

    a. If Project pumping has lowered water levels by 5 feet or more and increased pumping lifts, increased energy costs shall be calculated. Payment or reimbursement for the increased costs shall be provided at the option of the affected well owner on an annual basis. In the absence of specific electrical use data supplied by the well owner, the

project owner shall use **SOIL&WATER-5** to calculate increased energy costs.

b. If groundwater monitoring data indicate Project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10% or more of the pre-Project average seasonal yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. Should the well yield reductions be recurring, the project owner shall provide payment or reimbursement for periodic maintenance throughout the life of the Project. If with treatment the well yield is incapable of meeting 110% of the well owner's maximum daily demand, dry season demand, or annual demand the well owner should be compensated by reimbursement or well replacement as described under Condition 3.c.

c. If Project pumping has lowered water levels to significantly impact well yield so that it can no longer meet its intended purpose, causes the well to go dry, or cause casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Payment or reimbursement shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well of comparable design and yield (only deeper).. The demand for water, which determines the required well yield, shall be determined on a per well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting 110% of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-project well yield documented by the initial well reconnaissance met or exceeded these yield levels.

d. The project owner shall notify any owners of the impacted wells within one month of the CPM approval of the compensation analysis for increased energy costs.

e. Pump lowering – In the event that groundwater is lowered as a result of Project pumping to an extent where pumps are exposed but well screens remain submerged the pumps shall be lowered to maintain production in the well. The

Project shall reimburse the impacted well owner for the costs associated with lowering pumps.

f. Deepening of wells – If the groundwater is lowered enough as a result of Project pumping that well screens and/or pump intakes are exposed, and pump lowering is not an option, such affected wells shall be deepened or new wells constructed. The project owner shall reimburse the impacted well owner for all costs associated with deepening existing wells or constructing new wells shall be borne by the project owner.

4. After the first five-year operational and monitoring period the CPM shall evaluate the data and determine if the monitoring program for water level measurements should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected. The determination of whether the monitoring program should be revised or eliminated shall be made by the CPM.

5. If mitigation includes monetary compensation, the project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of Project operation or, if lump-sum payments are made, payment is made by March 31 following the first year of operation only. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.

6. At the end of every subsequent five-year monitoring period, the collected data shall be evaluated by the CPM and they shall determine if the sampling frequency should be revised or eliminated.

7. During the life of the Project, the project owner shall provide to the CPM all monitoring reports, complaints, studies and other relevant data within 10 days of being received by the project owner.

Verification: The project owner shall do all of the following:

At least 60 days prior to operation of the site groundwater supply wells, the project owner shall submit to the CPM, a comprehensive report presenting all the data and information required in item A above. The CPM will provide comments to the plan 15 days following submittal, and the final plan shall be approved 15 days prior to operation of the site groundwater supply wells. The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.

During Project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in item B above. The quarterly reports shall be provided 30 days following the end of the quarter. The project owner shall also submit to the CPM all calculations and assumptions made in development of the report data and interpretations.

No later than March 31 of each year of construction or 60 days prior to Project operation, the project owner shall provide to the CPM for review and approval, documentation showing that any mitigation to private well owners during Project construction was satisfied, based on the requirements of the property owner as determined by the CPM.

During Project operation, the project owner shall submit to the CPM, applicable quarterly, semi-annual and annual reports presenting all the data and information required in item C above. Quarterly reports shall be submitted to the CPM 30 days following the end of the quarter. The fourth quarter report shall serve as the annual report and shall be provided on January 31 in the following year.

The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, calculations, and assumptions used in development of any reports.

After the first five year operational and monitoring period, the project owner shall submit a 5 year monitoring report to the CPM that includes all monitoring data collected and a summary of the findings. The CPM will determine if the water level measurements and water quality sampling frequencies should be revised or eliminated.

SOIL&WATER-5 Where it is determined that the project owner shall reimburse a private well owner for increased energy costs identified as a result of analysis performed in Condition of Certification **SOIL&WATER-4,** the project owner shall calculate the compensation owed to any owner of an impacted well as described below.

Increased cost for energy	= change in lift/total system head x total energy consumption x costs/unit of energy

Where:

change in lift (ft)	= calculated change in water level in the well resulting from project
total system head (ft)	= elevation head + discharge pressure head
elevation head (ft)	= difference in elevation between wellhead discharge pressure gauge and water level in well during pumping.
discharge pressure head (ft)	= pressure at wellhead discharge gauge (psi) X 2.31

The project owner shall submit to the CPM for review and approval the documentation showing which well owners must be compensated for increased energy costs and that the proposed amount is sufficient compensation to comply with the provisions of this condition.

- Any reimbursements (either lump sum or annual) to impacted well owners shall be only to those well owners whose wells were in service within six months of the Commission decision and within a 5-mile radius of the project site.
- The project owner shall notify all owners of the impacted wells within one month of the CPM approval of the compensation analysis for increase energy costs.
- Compensation shall be provided on either a one-time lump-sum basis, or on an annual basis, as described below.

Annual Compensation: Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the project owner shall provide energy meters for each well or well field affected by the project. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings or other verification of fuel consumption. For each year after the first year of operation, the project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

One-Time Lump-Sum Compensation: Compensation provided on a one-time lump-sum basis shall be based on a well-interference analysis, assuming the maximum project-pumping rate of 300 afy. Compensation associated with increased pumping lift for the life of the project shall be estimated as a lump sum payment as follows:

- The current cost of energy to the affected party considering time of use or tiers of energy cost applicable to the party's billing of electricity from the utility providing electric service, or a reasonable equivalent if the party independently generates their electricity;
- An annual inflation factor for energy cost of 3%; and
- A net present value determination assuming a term of 30 years and a discount rate of 9%;

Verification: The project owner shall do all of the following:

1. No later than 30 days after CPM approval of the well drawdown analysis, the project owner shall submit to the CPM for review and approval all documentation and calculations describing necessary compensation for energy costs associated with additional lift requirements.

2. The project owner shall submit to the CPM all calculations, along with any letters signed by the well owners indicating agreement with the calculations, and the name and phone numbers of those well owners that do not agree with the calculations.

Compensation payments shall be made by March 31 of each year of project operation or, if lump-sum payment is selected, payment shall be made by March 31 of the first year of operation only. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.

WASTE DISCHARGE REQUIREMENTS

SOIL&WATER-6 The project owner shall comply with the requirements specified in Appendix B, C, and D. These requirements relate to discharges, or potential discharges, of waste that could affect the quality of waters of the state, and were developed in consultation with staff of the State Water Resources Control Board and/or the applicable California Regional Water Quality Control Board (hereafter "Water Boards"). It is the Commission's intent that these requirements be enforceable by both the Commission and the Water Boards. In furtherance of that objective, the Commission hereby delegates the enforcement of these requirements, and associated monitoring, inspection and annual fee collection authority, to the Water Boards. Accordingly, the Commission and the Water Board shall confer with each other and coordinate, as needed, in the enforcement of the requirements. The project owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards. In addition, the Water Boards may "prescribe" these requirements as waste discharge requirements pursuant to Water Code Section 13263 solely for the purposes of enforcement, monitoring, inspection, and the assessment of annual fees, consistent with Public Resources Code Section 25531, subdivision (c).

Verification: The Project owner shall follow the groundwater quality monitoring requirements as provided in SOIL&WATER-18 by providing Groundwater Quality Monitoring and Reporting Plan 90 days prior to operation of water supply wells for construction activities. The plan shall provide methods and procedures for monitoring background water quality, and site groundwater quality related to operation of the waste management units. Well locations, groundwater sampling procedures and analytical methods shall be provided consistent with requirements stipulated in the Waste Discharge Requirements provided in Appendix B, C and D.

No later than 60 days prior to any wastewater discharge or use of land treatment units, the project owner shall provide documentation to the CPM, with copies to the CRBRWQCB, demonstrating compliance with the WDRs established in Appendices B, C, and D. Any changes to the design, construction, or operation of

the evaporation basins, treatment units, or storm water system shall be requested in writing to the CPM, with copies to the CRBRWQCB, and approved by the CPM, in consultation with the CRBRWQCB, prior to initiation of any PSPP Soil and Water Opening Testimony Page 5 changes. The project owner shall provide to the CPM, with copies to the CRBRWQCB, all monitoring reports required by the WDRs, and fully explain any violations, exceedances, enforcement actions, or corrective actions related to construction or operation of the evaporation basins or treatment units.

SEPTIC SYSTEM AND LEACH FIELD REQUIREMENTS

SOIL&WATER-7 The project owner shall comply with the requirements of the County of Riverside Ordinance Code Title 8, Chapter 8.124 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 Riverside and the CRBRWQCB to ensure that the project has complied with county and state sanitary waste disposal facilities requirements. Written assessments prepared by the County of Riverside and the CRBRWQCB regarding the project's compliance with these requirements must be submitted to the CPM for review and approval 30 days prior to the start of power plant operation.

REVISED PROJECT DRAINAGE REPORT AND PLANS

SOIL&WATER-8 The project owner shall provide a revised Drainage Report which includes the following additional information:

A. Sizing of the Center Channel which considers the potential failure of the earthen berm located along the Corn Spring Wash crossing under I-10.

B. Revised onsite hydrology calculations using CN values consistent with the Riverside County Hydrology Manual for graded areas.

C. Detailed analysis and documentation of onsite swales and drainage channels demonstrating adequate capacity to ensure overtopping will not occur. This is of special concern for collector channels which are located at the top of terraces where there is a large drop (20 feet ±) from the outside of the channel to the lower terrace. It shall be demonstrated that seepage from these channels will not compromise the adjacent slope to the lower terrace.

D. Detailed scour calculations to justify toe-down depths for all soil cement segments, drop structures, slope protection, and any other features where scour is an issue.

E. Revised onsite hydrology map showing peak discharge values at locations where the onsite drainage system discharges into the West, Center, or East channels, or directly offsite.

F. Hydraulic and scour analysis for proposed drainage modifications associated with the construction of linear features including culvert crossings, at-grade crossings, bank protection and other potential features.

G. Digital copies of all HEC-HMS and HEC-RAS analysis.

H. A specific discussion of how the proposed onsite drainage design will protect the facility from erosion and the possible failure of the facilities resulting in a release of HTF.

The project owner shall also provide the 30% Grading and Drainage Plans which include the design based on information provided in the revised Drainage Report outlined above.

Verification: The project owner shall submit a Revised Project Drainage Report with the 30% Grading and Drainage Plans to the CPM for their review and comments 30 days prior to construction activities. The project owner shall address comments provided by the CPM until approval of the report is issued. All comments and concepts presented in the approved Revised Project Drainage Report with the 30%Grading and Drainage Plans shall be included in the final Grading and Drainage Plans. The Revised Project Drainage Report and 30% Grading and Drainage Plans shall be approved by the CPM.

DETAILED FLO-2D ANALYSIS

SOIL&WATER-9 The project owner shall provide a detailed hydraulic analysis utilizing FLO-2D which models pre- and post-development flood conditions for the 10-, 25- and 100-year storm events. The post-development model must include all proposed collector channels, end diffuser structures and berms. The methods and results of the analysis must be fully documented in a Technical Memorandum or in the revised Project Drainage Report required in **SOIL&WATER-8**. Graphical output must include depth and velocity mapping as well as mapping which graphically shows the changes in both of these parameters between the pre- and post development conditions. Color shading schemes used for the mapping must be consistent between all maps as well as clear and easily differentiated between designated intervals for hydraulic parameters. Intervals to be used in the mapping are as follows:

- Flow Depth: at 0.20 ft intervals up to 1 ft, and 0.40 ft intervals thereafter.
- Velocity: 0.5 ft/s intervals

A set of figures shall be provided at a scale of no less than 1 inch = 200 feet which show the extent and depths of flows entering the North, South and West channels for the 100-year event. A figure at the same scale shall also be provided for depth, velocity and the relative change in these parameters at and downstream of the four end diffuser structures for the 10-, 25- and 100-year events. Digital input and output files associated with the FLO-2D analysis must be included with all submittals. The results of this analysis shall be used for design of the 30% project grading and drainage plans.

Verification: The project owner shall submit a detailed FLO-2D analysis to the CPM for review and comment in addition to the 30% Grading and Drainage Plans and revised Project Drainage Report required in **SOIL&WATER-8**. The project owner shall address comments provided by the CPM until approval of the analysis is issued.

DRAINAGE CHANNEL DESIGN

SOIL&WATER-10 All collector and conveyance channels shall be constructed consistent with Riverside County Flood Control and Water Conservation District (RCFCWCD) guidelines where applicable. Grade control structures shall be utilized where needed to meet channel velocity and Froude number requirements. Channels shall be sized along discreet sections based on the results of the detailed FLO-2D analysis described in **SOIL&WATER-9**. All grade control and drop structures shall have adequate toe-down to account for the design drop plus two additional feet to account for potential downcutting of the channel over time. Channel confluence design must be given special consideration, especially as the preliminary Grading and Drainage Plans show 90 degree angles of confluence at nearly all locations. The issues of confluence hydraulics and potential scour shall be specifically addressed in the revised Drainage Report.

Offsite flows shall discharge directly into collector channels following the natural drainage patterns.

The proposed collector channel design must be fully documented in the Grading and Drainage plans and must include the following information:

A. Detailed and accurate cut/fill lines demonstrating in plan view how the channel would tie into existing grade and the solar facility.

B. Channel cross-sections at 100-foot intervals showing the channel geometry, existing grade, proposed grade at the facility and how the channel would tie in at on both sides.

C. Detailed channel profiles showing existing and finished grades at channel flow line and left and right banks. All drop structures as well as the toe of soil cement profile must also be shown and fully annotated. The 100-year water surface elevation shall be provided on all profiles.

D. Typical sections and design details for all discreet channel sections, drop structures, channel confluences, flow dispersion structures and other relevant drainage features.

E. Details of all drainage modifications associated with the construction of linear features such as culverts, at-grade crossings, bank protection and other potential features.

F. Consistent nomenclature and stationing on all plans, sections, profiles and details.

Verification: The project owner shall prepare preliminary, 30% channel design drawings and submit two copies for the CPM review and comment. The preliminary design drawings shall be submitted at the same time as the **Revised Project Drainage Report** in **SOIL&WATER-8** and FLO 2D Analysis in **SOIL&WATER-9**. The project owner shall update and modify the design as necessary to obtain the CPM approval.

CHANNEL EROSION PROTECTION

SOIL&WATER-11 The project owner shall provide revised preliminary Grading and Drainage Plans which incorporate the items and information as listed below for the channels designated as North, West, South, Southeast and Central on the existing plans (AECOM 2010a).

A. Soil cement bank protection must be provided such that the channels are protected from bank erosion and lateral headcutting. The extents of the proposed bank protection must be shown on the revised Grading and Drainage Plans. Typical sections for these channels must show the layout of the bank protection including thickness, width and toe-down location and depth consistent with the scour calculation provided in the revised Drainage Report.

B. Soil cement bank protection shall be provided on both channel banks wherever 10-year channel flow velocity exceeds 5 ft/s. It shall be provided on the outer channel bank wherever offsite topography and a detailed FLO-2D analysis indicate surface flow would enter the collector channels.

C. Soil cement bank protection shall be provided at all channel confluences of otherwise unlined channels where the result of the detailed hydraulic analysis presented in the revised Drainage Report indicate the increased potential for erosion due to adverse angles of confluence. Detailed plans for each confluence showing the extents of the soil cement based on specific hydraulic

conditions shall be provided in the formal Grading and Drainage Plans.

D. Other methods of channel stabilization, such as dumped riprap or gabions, will not be permitted. Bio-stabilization measures are not permitted.

E. Earthen berms used on the outside of collector channels to guide flow to discreet points of discharge into a channel shall not be utilized in lieu of soil cement on the outside bank of collector channels. Offsite flows shall discharge directly into collector channels.

F. Design and construction criteria for the use of soil cement on the site shall be prepared by the Owner/Developer's engineer in conjunction with the design methodology established by the Geotechnical Engineer of Record. The design and construction criteria shall be based on local and/or regional requirements and specifications. The design and construction criteria, the geotechnical design for the soil cement, the site specific specifications for the soil cement, the method of installation for the soil cement, and the local or regional standards being used for the design criteria shall be provided to the CPM for review and comment consistent with the verification requirements for this Condition of Certification. The slope requirements that are proposed for use (3:1 or 4:1), and the associated method of installation (i.e., 8 inch lift versus slope application) shall be fully documented for review and approval by the CPM prior to any field installation of soil cement.

G. A soils report indicating the suitability of the Project soils for use in the production of soil cement to the Project specifications shall be submitted with the revised Grading and Drainage Plans.

H. The bottom of engineered collector channels may be left earthen or fully lined at the discretion of the engineer. Fully lined channels will have higher allowable velocities and Froude numbers assuming hydraulic jumps are modeled and considered in the channel design.

I. Modifications to the existing drainages to allow construction of and future access to linear facilities shall require stabilization of the channels in the vicinity of those modifications. Locations of disturbance to the existing drainages shall be stabilized consistent with sound engineering practice to eliminate future negative impacts upstream and downstream of the linear facility in the form of downcutting, erosion and headcutting. The use of "non-engineered" culvert crossings shall not be allowed. All structures to be utilized in existing drainages along linear facilities shall be documented in the project drainage report and reflected in the project improvement plans. Channel erosion mitigation measures

along linear facilities shall be subject to all the requirements of this Condition of Certification where applicable.

Verification: The required information and criteria shall be incorporated into the Grading and Drainage Plans and with all subsequent submittals as required in **SOIL&WATER-8** and **SOIL&WATER-9**. The project owner shall address all comments by the CPM related to the channel erosion protection design through final plan approval.

CHANNEL MAINTENANCE PROGRAM

SOIL&WATER-12 The project owner shall develop and implement a Channel Maintenance Program that provides long-term guidance to implement routine channel maintenance projects and comply with conditions of certification in a feasible and environmentally sensitive manner. The Channel Maintenance Program will be a process and policy document prepared by the project owner, reviewed and approved by the CPM. The Channel Maintenance Program shall include the following:

A. **Purpose and Objectives** – Establishes the main goals of the Program, of indefinite length, to maintain the diversion channel to meet its original design to provide flood protection, support Project mitigation, protect wildlife habitat and movement/ migration, and maintain groundwater recharge.

B. **Application and Use** - The channel maintenance work area is defined as the Project engineered channel, typically extending to the top of bank, include access roads, and any adjacent property that the Project owns or holds an easement for access and maintenance. The Program shall include all channel maintenance as needed to protect the Project facilities and downstream property owners.

C. **Channel Maintenance Activities**

1. **Sediment Removal** - sediment is removed when it: (1) reduces the diversion channel effective flood capacity, to less than the design discharge, (2) prevents appurtenant hydraulic structures from functioning as intended, and (3) becomes a permanent, non-erodible barrier to instream flows.

2. **Vegetation Management** - manage vegetation in and adjacent to the diversion channel to maintain the biological functions and values proposed in the mitigation. Vegetation management shall include control of invasive or nonnative vegetation as prescribed in Condition of Certification **BIO-14**.

3. **Bank Protection and Grade Control Repairs** – Bank protection and grade control structure repairs involve any action by the project owner to repair eroding banks, incising toes, scoured channel beds, as well as preventative erosion

protection. The project owner shall implement instream repairs when the problem: (1) causes or could cause significant damage to the Project; adjacent property, or the structural elements of the diversion channel; (2) is a public safety concern; (3) negatively affects groundwater recharge; or (4) negatively affects the mitigation vegetation, habitat, or species of concern.

4. **Routine Channel Maintenance** - trash removal and associated debris to maintain channel design capacity; repair and installation of fences, gates and signs; grading and other repairs to restore the original contour of access roads and levees (if applicable); and removal of flow obstructions at Project storm drain outfalls.

5. **Channel Maintenance Program – Exclusions** including: emergency repair and CIP.

D. **Related Programmatic Documentation** – the CPM will review and approve the Channel Maintenance Program programmatic documentation. Maintenance activities shall comply with the streambed alteration agreement provisions and requirements for channel maintenance activities consistent with California's endangered species protection regulations and other applicable regulations.

E. **Channel Maintenance Process Overview**

1. **Program Development and Documentation** – This documentation provides the permitting requirements for channel maintenance work in accordance with the conditions of certification for individual routine maintenance of the engineered channel without having to perform separate CEQA/NEPA review or obtain permits.

2. **Maintenance Guidelines** - based on two concepts: (1) the maintenance standard and (2) the acceptable maintenance condition, and applies to sediment removal, vegetation management, trash and debris collection, blockage removal, fence repairs, and access road maintenance.

3. **Implementation** – Sets Maintenance Guidelines for vegetation and sediment management. The Project's vegetation management activities are established in Condition of Certification **BIO-14**. Maintenance Guidelines for sediment removal provide information on the allowable depth of sediment for the engineered channel that would continue to provide design discharge protection.

4. **Reporting** – the CPM requires the following reports to be submitted each year as part of the Annual Compliance Report:

a. Channel Maintenance Work Plan – Describes the planned "major" maintenance activities and extent of work to be accomplished; and

b. Channel Maintenance Program Annual Report – Specifies which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

c. A report describing "Lessons Learned" to evaluate the effectiveness of both resource protection and maintenance methods used throughout the year.

F. Resource Protection Policies - establishes policies to ensure that resources would be protected to the fullest extent feasible during routine channel maintenance activities. Policies shall be developed to guide decision-making for channel maintenance activities. BMPs shall be developed to implement these policies.

Verification: At least 60 days prior to the start of any project-related site disturbance activities (excluding linear construction), the project owner shall coordinate with the CPM to develop the Channel Maintenance Program. The project owner shall submit two copies of the programmatic documentation, describing the proposed Channel Maintenance Program, to the CPM (for review and approval). The project owner shall provide written notification that they plan to adopt and implement the measures identified in the approved Channel Maintenance Program. The project owner shall:

- Supervise the implementation of a Channel Maintenance Program in accordance with conditions of certification;
- Ensure the Project Construction and Operation Managers receive training on the Channel Maintenance Program;
- As part of the Project Annual Compliance Report to the CPM, submit a Channel Maintenance Program Annual Report specifying which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

CLOSURE AND DECOMMISSIONING PLAN

SOIL&WATER-13 The project owner shall prepare a decommissioning plan that will meet the requirements of the BLM. 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 60 days prior to the start of site mobilization or alternate date as agreed to with the CPM, the project owner shall submit decommissioning plans to the CPM for review and approval. The project owner shall amend these documents as necessary, with approval from the CPM, should the decommissioning scenario change in the future.

MITIGATION OF IMPACTS TO THE PALO VERDE MESA GROUNDWATER BASIN

SOIL&WATER-14 To mitigate the impact from Project pumping, the Project owner shall identify and implement offset measures to mitigate the increase in discharge from surface water to groundwater that affects recharge in the Palo Verde Valley Groundwater Basin (USGS). The project owner shall implement **SOIL&WATER-17** to evaluate the change in recharge over the life of the project including any latency effects from Project pumping. The activities shall include the following water conservation projects: payment for irrigation improvements in Palo Verde Irrigation District, payment for irrigation improvements in Imperial Irrigation District, purchase of water rights within the Colorado River Basin that will be held in reserve, and/or BLM's Tamarisk Removal Program or other proposed mitigation activities acceptable to the CPM.

The activities proposed for mitigation shall be outlined in a Water Offset Plan that will be provided to the CPM for review and approval and which shall include the following at a minimum:

A. Identification of the water offsets as determined in **SOIL&WATER-17**;

B. Demonstration of the Project owner's ability to conduct the activity;

C. Whether any governmental approval of the identified offset will be needed, and if so, whether additional approval will require compliance with CEQA or NEPA;

D. Demonstration of how much water is provided by each of the offset measures;

E. An estimated schedule for completion of the activities;

F. Performance measures that would be used to evaluate the amount of water replaced by the proposed offset measure; and,

G. A Monitoring and Reporting Plan outlining the steps necessary and proposed frequency of reporting to show the activities are achieving the intended benefits of the water supply offsets;

Verification: The project Owner shall submit a Water Offset Plan to the CPM for review and approval thirty (30) days before the start of extraction of groundwater for construction or operation.

The Project owner shall implement the activities reviewed and approved in the Water Offset Plan in accordance with the agreed upon schedule in the Water Offset Plan. If agreement with the CPM on identification or implementation of

offset activities cannot be achieved the Project owner shall immediately halt construction or operation until the agreed upon activities can be identified and implemented.

GROUNDWATER PRODUCTION REPORTING

SOIL&WATER-15 The Project is subject to the requirement of Water Code Sections 4999 et. seq. for reporting of groundwater production in excess of 25 acre feet per year.

Verification: The project owner shall file an annual "Notice of Extraction and Diversion of Water" with the SWRCB in accordance with Water Code Sections 4999 et. seq. The project owner shall include a copy of the filing in the annual compliance report.

GROUNDWATER SUBSIDENCE MONITORING AND ACTION PLAN

SOIL&WATER-16 One monument monitoring station per production well or a minimum of three stations shall be constructed to measure potential inelastic subsidence that may alter surface characteristics of the Chuckwalla Valley near the proposed production wells. The applicant shall:

A. Prepare and submit a Subsidence Monitoring Plan (SMP). The plan shall include the following elements:

   1. Construction diagrams of the proposed monument monitoring station including size and description, planned depth, measuring points, and protection measures;

   2. Map depicting locations (minimum of three) of the planned monument monitoring stations;

   3. Monitoring program that includes monitoring frequency, thresholds of significance, reporting format.

B. Prepare quarterly reports commencing three (3) months following commencement of groundwater production during construction and operations.

   1. The reports shall include presentation and interpretation of the data collected including comparison to the thresholds developed in Item C.

C. Prepare a Mitigation Action Plan that details the following:

   1. Thresholds of significance for implementation of proposed action plan;

      a. Any subsidence that may occur will not be allowed to damage existing structures either on or off the site or alter the appearance or use of the structure;

b. Any subsidence that may occur will not be allowed to alter the natural drainage patterns or permit the formation of playas or lakes;

c. Any subsidence that violates (a) or (b) will result in the project owner investigating the need to immediately reduce/cease pumping until the cause is identified or subsidence caused by project pumping abates and the structures and/or drainage patterns are stabilized and corrected.

2. Action Plan that details proposed actions by the applicant in the event thresholds are achieved during the monitoring program.

   The applicant shall submit the Ground Subsidence Monitoring and Action Plan that is prepared by an Engineering Geologist registered in the State of California 30 days prior to the start of extraction of groundwater for construction or operation.

Verification: The project owner shall do all of the following:

1. At least 30 days prior to project construction, the project owner shall submit to the CPM, a comprehensive report presenting all the data and information required in item A above.
2. The project owner shall submit to the CPM all calculations and assumptions made in development of the SMP.
3. During Project construction and operations, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in item B above.
4. The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.
5. After the first five years of the monitoring period, the project owner shall submit a 5-year monitoring report to the CPM that submits all monitoring data collected and provides a summary of the findings. The CPM will determine if the Ground Subsidence Monitoring and Action Plan frequencies should be revised or eliminated.

ESTIMATION OF SURFACE WATER IMPACTS

SOIL&WATER-17 To further assess the impacts from Project pumping, the Project owner shall estimate the increase in discharge from surface water to groundwater that affects recharge in the Palo Verde Valley Groundwater Basin (PVVGB)(USGS). This estimate may be used for determining the appropriate offset volume in accordance with **SOIL&WATER-14**. The Project owner shall do the following to provide an estimate for review and approval by the CPM:

1. The Project owner shall conduct a detailed analysis of the affect from Project pumping on at the end of the 30 year operational period the

change in groundwater outflow from the Chuckwalla Valley Groundwater Basin to the Palo Verde Valley and how the change in outflow may affect recharge of surface water to the PVVGB from the Project's groundwater extraction activities. The detailed analysis shall include:

a. The conceptual model developed in the AFC and the Staff Assessment, for the Chuckwalla Valley Groundwater Basin and the Palo Verde Valley, and any changes resultant from further analysis in support of numerical modeling;

b. The use of an appropriately constructed groundwater model 1.) for the eastern portion of the Chuckwalla Valley Groundwater Basin that describes the effect from Project pumping on the outflow of groundwater to the Palo Verde Valley, and 2.) an appropriately constructed groundwater model of the Palo Verde Valley, inclusive of the mesa and floodplain. The models shall be coupled as appropriate to determine the effect from Project pumping on the surface water recharge in the Palo Verde Valley. Each model shall be constructed in consideration of the following:

    i. Horizontal and vertical geometry information gained through on- and offsite investigations conducted as part of the hydrogeological field investigations for the AFC, and any subsequently documented investigation performed as part of the model development ;

    ii. Aquifer properties developed as part of the AFC and any subsequently documented investigations performed as part of the model development, and an assessment of aquifer properties available from other published sources. The properties used shall be representative of the available data; and

    iii. The modeling effort shall include a sensitivity analysis where in the most sensitive variables will be identified and varied within a reasonable range outside of the calibration value to provide an assessment of the range of potential impacts from the Project pumping on the recharge from the Palo Verde Valley Groundwater Basin.

c. Reporting of the results of the modeling effort

d. Estimation of the increased contribution of surface water discharge to groundwater and the change in recharge to the Palo Verde Valley Groundwater Basin attributable to Project groundwater pumping.

2. The analysis shall include the following elements:

a. The change in groundwater flux to the regional aquifer from surface water sources attributable to Project pumping in afy for the

life of the Project (30 years) until pre-project (within 95%) conditions are achieved;

b. A sensitivity analysis that would provide a range in the potential changes in flux relative to variation in the key model variables within each model as a result of Project pumping for life of the Project until pre-project (within 95%) conditions are achieved;

3. The project owner shall present the results of the conceptual model, numerical model, transient runs and sensitivity analysis in a report for review and approval by the CPM. The report shall include all pertinent information regarding the development of the numerical models. The report shall include as discussion of the following as appropriate to each model:

   a. Introduction

   b. Previous Investigations

   c. Conceptual Model

   d. Numerical Model and Input Parameters

   e. Sensitivity Analysis

   f. Transient Modeling Runs

   g. Conclusions

Verification: Within thirty (30) days following certification of the proposed Project, the project owner shall submit to the CPM for their review and approval a report detailing the results of the modeling effort. The report shall include the estimated amount of change in discharge from surface water to groundwater within the Palo Verde Valley due to Project pumping. This estimate shall be used for determining the appropriate volume of water for offset in accordance with **SOIL&WATER-14.**

SOIL&WATER-18 The project owner shall submit a Groundwater Quality Monitoring and Reporting Plan to the CPM for review and approval. The Groundwater Quality Monitoring and Reporting Plan shall provide a description of the methodology for monitoring background and site groundwater quality following the Waste Discharge Requirements of **SOIL&WATER-6**, to assess the effects from pumping on changes in the aquifer water chemistry, and to monitor potential impacts from operation of proposed septic leach fields, if required. The initial background water quality sampling shall be implemented during the background groundwater level monitoring events in accordance with **SOIL&WATER-4**. Prior to project construction, access to offsite wells shall be obtained and samples collected and monitoring wells shall be installed to evaluate background water quality in the shallow and deep regional aquifer in areas that will be affected by Project pumping. These data will be used to establish pre-construction water quality that can be

quantitatively compared against data gathered during construction and operation to assess if project pumping or a release from the waste management units (See **SOIL&WATER-6**), or septic systems (if required) has adversely affected the water supply or sensitive receptors.

1. A Groundwater Quality Monitoring and Reporting Plan shall be submitted to the CPM 90 days prior to operation of the water supply wells for construction. The Plan shall include a scaled map showing the site and vicinity, existing well locations, and proposed monitoring locations (both existing wells and new monitoring wells proposed for construction). Additional monitoring wells that shall be installed include wells required in accordance with Condition of Certification **SOIL&WATER-6**, for the evaporation ponds and land treatment unit proposed for the project, and if required for the sanitary leachfield system. The map shall also include relevant natural and man-made features (existing and proposed as part of this project). The plan also shall provide: (1) well construction information and borehole lithology for each existing well proposed for use as a monitoring well; (2) description of proposed drilling and well installation methods; (3) proposed monitoring well design; and, (4) schedule for completion of the work.

2. A Well Monitoring Installation and Groundwater Quality Network Report shall be submitted to the CPM for review and approval in conjunction with Condition of Certification **SOIL&WATER-4** and 60 days prior to operation of the water supply wells.. The report shall include a scaled map showing the final monitoring well network. It shall document the drilling methods employed, provide individual well construction as-builds, borehole lithology recorded from the drill cuttings, well development, and well survey results. The well survey shall measure the location and elevation of the top of the well casing and reference point for all water level measurements, and shall include the coordinate system and datum for the survey measurements. Additionally, the report shall describe the water level monitoring equipment employed in the wells and document their deployment and use.

3. As part of the monitoring well network development, all newly constructed monitoring wells shall be constructed consistent with State and Riverside County specifications.

4. Prior to use of any groundwater for construction, all groundwater quality and groundwater level monitoring data shall be reported to the CPM in the Well Monitoring Installation and Groundwater Quality Network Report that is due in conjunction with the background water level monitoring report under **SOIL&WATER-4** and 60 days prior to construction. The report shall include the following:

a. An assessment of pre-project groundwater levels, a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), and a comparison and assessment of water level data relative to the assumptions and spatial trends simulated by the applicant's groundwater model.

b. An assessment of pre-project groundwater quality with groundwater samples analyzed for those constituents required under the Waste Discharge Requirements (Appendix B, C and D) and if not included total dissolved solids (TDS), chloride, nitrates, major cations and anions, oxygen-18 and deuterium isotopes, and soluble metals.

c. The data shall be tabulated and include the estimated range (minimum and maximum values), average, and median for each constituent analyzed. If a sufficient number of data points are available from the background sampling, the data shall also be analyzed using the Mann-Kendall test for trend at 90% confidence to assess whether pre-project water quality trends, if any, are statistically significant.

5. During project construction and during the first five years of project operations, the project owner shall semi-annually monitor the quality of groundwater and changes in groundwater elevation and submit data semiannually to the CPM one month following the end of the 1st and 3rd quarter and following the operation reporting requirement under **SOIL&WATER-4**. After five years of project operations, the frequency and scope of the monitoring program shall be reassessed by the CPM. The semi-annual report shall document water level monitoring methods, the water level data, water level plots, and a comparison between pre- and post-project start-up water level trends as itemized below. The report shall also include a summary of actual water use conditions, monthly climatic information (temperature and rainfall) from the nearest meteorological monitoring station, and a comparison and assessment of water level data relative to the assumptions and simulated spatial trends predicted by the applicant's groundwater model.

   a. Groundwater samples from all wells in the monitoring well network shall be analyzed and reported semi-annually for those constituents required in the Waste Discharge Requirements (Appendix B, C and D) and if not included TDS, chloride, nitrates, cations and anions, oxygen-18 and deuterium isotopes.

   b. For analysis purposes, pre-project water quality shall be defined by samples collected prior to project construction as specified above, and compliance data shall be defined by samples collected after the construction start date to determine the effects from Project

pumping and after the installation and operation of the waste management units in compliance with the Waste Discharge Requirements (Appendix B, C and D) and the sanitary leachfields, if required.

c. Trends in water quality data shall be analyzed using the Mann-Kendall test for trend at the 90% confidence. Trends in the compliance data shall be compared and contrasted to pre-project trends, if any.

d. The contrast between pre-project and compliance mean or median concentrations shall be compared using an Analysis of Variance (ANOVA) or other appropriate statistical method approved by the CRBRWQCB for evaluation of water quality impacts. A parametric ANOVA (for example, an F-test) can be conducted on the two data sets if the residuals between observed and expected values are normally distributed and have equal variance, or the data can be transformed to an approximately normal distribution. If the data cannot be represented by a normal distribution, then a nonparametric ANOVA shall be conducted (for example, the Kruskal-Wallis test). If a statistically significant difference is identified at 90% confidence between the two data sets, the monitoring data are inconsistent with random differences between the pre-project and baseline data indicating a significant water quality impact from project pumping may be occurring.

e. If compliance data to evaluate the effects from Project pumping or potential impacts from operation of sanitary leachfield indicate that the water supply quality has deteriorated in (exceeds pre-project constituent concentrations in TDS, sodium, chloride, or other constituents identified as part of the monitoring plan and applicable Water Quality Objectives are exceeded for the applicable beneficial uses of the water supply) adjacent water supply wells that can be shown to be adversely influenced by Project Pumping for three consecutive years, the Project owner shall provide well-head treatment or a new water supply to either meet or exceed pre-project water quality conditions to any impacted water supply wells.

Verification: The project owner shall complete the following:

At least 90 days prior to construction, a Groundwater Level and Quality Monitoring and Reporting Plan shall be submitted to the CPM for review and approval.

At least 60 days prior to construction, a Well Monitoring Installation and Groundwater Level Network Report shall be submitted to the CPM for review and approval.

At least 60 days prior to use of any groundwater for construction, all groundwater quality and groundwater level monitoring data shall be reported to the CPM.

On a semiannual basis water quality data shall be collected during construction and 5 years following initial operation. The results of the monitoring will be reported on a semiannual basis, one month following the end of the 1st and 3rd quarters.

NON-TRANSIENT, NON-COMMUNITY WATER SYSTEM

SOIL&WATER-19 The Project is subject to the requirement of Title 22, Article 3, Sections 64400.80 through 64445 for a non-transient, non-community water system (serving 25 people or more for more than six months). In addition, the system shall require periodic monitoring for various bacteriological, inorganic and organic constituents.

Verification: The project owner shall submit the equivalent County of Riverside requirements to operate a non-transient, non-community water system with the County of Riverside at least 60 days prior to commencement of operations at the site. In addition, the project owner shall submit to the CPM a monitoring and reporting plan for production wells operated as part of the domestic water supply system prior to plant operations. The plan shall include reporting requirements including monthly, quarterly and annual submissions.

The project owner shall designate a California Certified Water Treatment Plant Operator as well as the technical, managerial and financial requirements as prescribed by State law. The project owner shall supply updates on an annual basis of monitoring requirements, any required submittals equivalent to the County of Riverside requirements including annual renewal requirements.

C. CULTURAL RESOURCES

This section addresses the cultural resources associated with the Palen Solar Power Project (PSPP), including potential impacts related to project construction, operation and decommissioning. The potential for impacts to cultural resources depends upon whether such resources are present and whether they would actually be encountered during project development and construction activities. Cultural resource materials such as artifacts, structures, or land modifications reflect the history of human development. Certain places that are important to Native Americans or local national/ethnic groups are also considered valuable cultural resources. Analysis in this topic area pertains to the structural and cultural evidence of human development in the project vicinity, as well as appropriate mitigation measures should cultural resources be disturbed by project excavation and construction.

Cultural resources are categorized as buildings, sites, structures, objects, and districts under California state law (for the purposes of the California Environmental Quality Act (CEQA). Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic. Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic.

When a cultural resource is determined to be significant, it is eligible for inclusion in the California Register of Historical Resources (CRHR). (Pub. Res. Code, § 5024.1; Cal. Code Regs., tit. 14, § 4850 et seq.) An archaeological resource that does not qualify as an historical resource may be considered a “unique” archaeological resource under California Environmental Quality (CEQA) (*see* Pub. Res. Code, § 21083.2.) In addition, structures older than 50 years (or less if the resource is deemed exceptional) can be considered for listing as significant historic structures. The Office of Historic Preservation’s Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

The CEQA Guidelines provide a definition of a historical resource as a “resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR,” or “a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code,” or “any object, building, structure, site, area, place, record, or manuscript which a

lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." [Cal. Code Regs., tit. 14, § 15064.5(a).] Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined eligible for the National Register of Historic Places (NRHP) and California Registered Historical Landmarks from No. 770 onward. [Pub. Res. Code, § 5024.1(d).]

Under the CEQA Guidelines, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one of the following four criteria: it is associated with events that have made a significant contribution to the broad patterns of our history (Criterion 1); or, it is associated with the lives of persons significant in our past (Criterion 2); or, that the resource embodies the distinctive characteristics of a type, period, or method of construction, or that it represents the work of a master, or possesses high artistic values (Criterion 3); or, that it has yielded, or may be likely to yield, information important to history or prehistory (Criterion 4). (Pub. Res. Code § 5024.1.) In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (Cal. Code Regs., tit. 14, § 4852(c); Pub. Res. Code § 5020.1 (j) or 5024.1). Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Setting and Historical Background

The proposed PSPP would be located approximately 10 miles east of the town of Desert Center in Eastern Riverside County along U.S. Interstate 10 (I-10) approximately halfway between the cities of Indio and Blythe and about three miles east of the southeast end of Joshua Tree National Park. The impact footprint of the proposed PSPP, including the substation, is approximately 3000 acres. (Ex. 301, pp. C.3-5 - C.3-7.)

The PSPP is situated within the northern Colorado Desert of eastern Riverside County. The Colorado Desert covers approximately 11,000 square miles,

divided among nine Bureau of Land Management (BLM) units, among them being the Palen Planning Unit. These units are almost entirely in a low, hot desert below 2,000 feet elevation. It is one of the harshest and most arid environments in North America. The terrain consists of a number of broad shallow valleys that, in a general sense, trend to the southeast, draining into the Colorado River. These valleys contain five playas or closed basin sinks formed by the low-lying obstructions in the valley floor. (Ex. 301, p. C.3-5.)

Valleys in the interior of the Colorado Desert planning units have been characterized, morphologically, as pediments, pediment plains, and base level plains with complicated geology of schists, granites, rhyolites, and basalts that make up the alkaline and often calcareous gravels and soils. These valleys surround and isolate a number of small, severely weathered mountain ranges. These ranges, often barren exposures of rock outcrop, talus slopes, and steep dissected canyons, run generally north-south in the northern areas and northwest-southeast in the southern portions. Peaks range to 4,000 feet in the north and 2,000 feet in the south. (Ex. 301, p. C.3-5.)

The Chuckwalla Valley is classified as a long shallow valley system that is actually contiguous with Pinto Valley to the north. Under more pluvial conditions, these valleys had the potential to overflow their blockades and become a continuous drainage. Today, water supply is limited to a very few springs and seeps in the mountains and higher washes. Groundwater in the deep sandy soils of the valleys usually requires extensive deep drilling and is well beyond the reach of vegetation. (Ex. 301, p. C.3-5.)

Palen Dry Lake is divided by alluvium into a northwest and southeast section. The two sections are isolated in part by mountains and miles of dunes formed during the modern dry regime. Palen Lake Northwest receives water mainly from the Coxcomb Mountains that abut immediately upon its northwest side. Palen Lake Southeast section is fed by drainage from the Eagle, Palen, Coxcomb, Chuckwalla, and Orocopia mountains. The PSPP lies within the Palen Lake southeast section. (Ex. 301, p. C.3-5.)

The proposed PSPP would use parabolic trough technology, which relies upon arrays of parabolic mirrors that collect heat energy from the sun and apply that heat, as high-pressure steam, to a traditional steam turbine to generate electricity. The facility would run two 250-MW power blocks, each centrally located within respective solar fields, comprised of solar arrays, gas-fired boiler, steam generator, turbine generator, air-cooled condenser, transmission lines,

related electrical system, water treatment system, and propane storage tank. The two power blocks would share a main office building, warehouse/maintenance building, a parking lot, an access road, a bioremediation area for soils contaminated with heat transfer fluid, and a central internal switchyard. The project would interconnect with California's electrical grid at the proposed Red Bluff Substation. The proposed PSPP would also include a substation, the gen-tie transmission line, and the telecommunication system. (Ex. 301, p. C.3-7.)

Human populations have occupied the California desert for at least 10,000 years. The Paleo-Indian Period (about 10,000–8000 BC) occurred during the first half of the Early Holocene. Isolated fluted projectile points have been recovered from the Pinto Basin, Ocotillo Wells, Cuyamaca Pass, and the Yuha Desert. The Lake Mojave Complex (8000-6000 BC) occurred during the second half of the Early Holocene and is characterized by Great Basin Stemmed Series projectile points (Lake Mojave and Silver Lake types), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools. The Pinto Complex (8000-3000 BC) spans portions of the Early and Middle Holocene. Toolstone use, based on sites attributed to this complex, focus upon materials other than obsidian and cryptocrystalline silicate. Beginning roughly in 3000 to 2000 BC, conditions in the Mojave Desert were warmer and drier and few archaeological sites date to this period. This suggests population densities were very low and it is possible some areas were largely abandoned. The Gypsum complex (2000 BC–200 AD), spanning most of the Early Late Holocene, is characterized by the presence of corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points. During the Rosespring Complex (200 AD–1000 AD), cultural systems profoundly changed in the southern California deserts with the introduction of the bow and arrow. During this time, a major increase in population is thought to have occurred, possibly resulting from a more productive environment and a more efficient hunting technology. During the Late Prehistoric Period (1000 AD–1700 AD), horticultural practices and pottery were introduced (most likely from the Hohokam area in southern Arizona or from northern Mexico), having its greatest impact along the Lower Colorado River. A complex cultural landscape composed of rock art and trails was developed during the Late Prehistoric period. (Ex. 301, pp. C.3-12 - C.3-14.)

Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features or resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock

shelters with perishable items; rock rings/stone circles, intaglios and cleared areas, and a vast network of trails, trail segments, markers and shrines, and quarry sites. Possible village locations are present at Palen Lake, Granite Well, and Hayfield Canyon. (Ex. 301, p. C.3-14.)

A cluster of temporary habitation and special activity (task) sites occurs around a quarry workshop in the Chuckwalla Valley. The Chuckwalla Valley quarry workshop complex probably was used throughout the Holocene. During this period, Chuckwalla Valley most likely was occupied, abandoned, and reoccupied by a succession of ethnic groups. In the Early Holocene (i.e., Lake Mohave complex times), the area may have been relatively densely inhabited. During the Middle Holocene (i.e., Pinto and Gypsum complexes period) it only may have been sporadically visited. The subsequent Late Holocene Rose Spring and Late Prehistoric periods probably witnessed reoccupation of the valley by Yuman and Numic-speaking peoples. (Ex. 301, p. C.3-14.)

Currently, it is unclear which historic Native American group or groups occupied or used the region in which the proposed project site is located, but the Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma are the most likely. The record indicates that the Chuckwalla Valley was not clearly assigned to any Native American group on maps depicting group territories. The west end of the Chuckwalla Valley was near the intersecting boundaries of Cahuilla-Serrano-Chemehuevi territory. Possibly before 800 BC, the Chemehuevi may have expanded into Serrano territory, occupying the Chuckwalla Valley. No evidence suggested that the Cahuilla occupied the area. Given its east-west orientation and location, however, the Chuckwalla Valley may have been neutral territory, occupied by no Native American group in particular, which served as an east-west trade and travel route. (Ex. 301, pp. C.3-21 to C.3-22.)

The Colorado Desert area, in which the PSPP is located, has remained one of the more sparsely populated regions of the American West. The harsh arid environment and paucity of natural water supply has presented a challenge to the development of trans-desert routes for the movement of people and goods, the exploitation of resources in the area, and the establishment of permanent settlement. The major historical themes for the Colorado Desert region and the PSPP area in eastern Riverside County, in particular, are centered on the establishment of Spanish and Mexican routes through the desert, early American trans-desert crossings, mining, military training, power transmission, and agriculture/ranching. (Ex. 301, p. C.3-32.)

The earliest recorded history of the lower Colorado River region began with the expeditions of Spanish explorers, who were lured by rumors of a rich northern Indian civilization. However, due to the Spaniards' failure to find the fabled northern treasures and the remoteness of the region, the Colorado Desert was seldom visited during the Spanish and Mexican periods. (Ex. 301, p. C.3-32.)

In 1846, during the opening stages of the Mexican-American war, General Stephen Watts Kearny led an advance column of the United States Army into the region. From Santa Fe, Kearny's troops entered California by way of Yuma, reaching San Diego in December, having abandoned their wagons shortly after crossing the Rio Grande. The war ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo. (Ex. 301, p. C.3-33.)

Only days after the Mexican-American War ended, gold was discovered, kicking off the California Rush of 1849. It is estimated that more than 100,000 travelers passed by way of the Yuma Crossing. The presence of so many travelers along the route had a definite impact on the desert. Whereas previous expeditions made the journey in isolation, during the Gold Rush, trails became relative highways. Companies of miners frequently encountered one another or ran across the remains of recently vacated campsites. The desert floor also became littered with articles abandoned when they either fell apart or proved too heavy or cumbersome for their weary owners. Broken wagons, furniture, articles of clothing, tools and even weapons left by the side of the road proved to be a bonanza for scavengers. (Ex. 301, p. C.3-33.)

After 1851, travel to California along the southern route through the Colorado Desert declined. Horse traders and livestock drovers still used the trail to drive herds from Texas and Mexico to California and the U.S. Army continued to send caravans of provisions from San Diego to its outpost, Fort Yuma, at least until 1852. Emigrants, moving west, however, were more apt to be settling in southern California as farmers or ranchers instead of prospecting for mineral resources. (Ex. 301, p. C.3-33.)

Anglo-American homesteading and settlement in the Chuckwalla Valley was dependent upon the access to groundwater. The first known documented well was that of Hank Brown, mapped as early as 1856, apparently excavated for use by the Department of Interior's General Land Office survey to establish the San Bernardino Base Line and Meridian through the then uncharted area. Washington, the surveyor noted the well was 45 feet deep and provided good water (about one mile west of the PSPP) near the present day airfield northeast

of Desert Center (about five miles northwest of the PSPP). Brown reportedly blazed a wagon road for the boundary surveys up Salt Creek Pass between the Orocopia and Chocolate Mountains and on toward present-day Desert Center (Ex. 301, p. C.3-33.)

Some twenty years later, Congress, to encourage and promote economic development of the arid public lands of the West, passed the Desert Land Act in 1877. Through this act, individuals could apply for entry onto public lands that could not produce a paying crop without artificial irrigation. After four years demonstrating proof of reclamation and improvements, desert entrymen would gain title to the land. (Ex. 301, p. C.3-34.)

Brown's offspring, Floyd Brown, was probably one of the earliest participants in the desert land entry program. It does not appear that many others joined him until a quarter century later. In 1908, a subsidiary organization to the Edison Light and Power Company of Los Angeles, the Chuckwalla Land and Power Co., obtained a number of claims on the California side of the Colorado River north of Parker with the intent of building a dam to generate power and irrigate the Chuckwalla Valley, 40 miles to the west. By the following year, practically all the land in the valley was taken, either by purchase, desert claim, or homestead under the encouragement offered by the development company. (Ex. 301, p. C.3-34.)

Four years later, the California Conservation Commission reported to the Governor and Legislature that while the power and irrigation project had been abandoned by the Chuckwalla Development Company, a group of 410 desert entrymen had formed the Chuckwalla Valley and Palo Verde Mesa Irrigation Association to proceed with the project independently. Most of these men were facing forfeiture of their lands and a loss on their investments, not being able to show final proof of securing water. The Senate and House Committees on Public Lands, recognizing their hardship, passed legislation granting them an extension (an exemption from cancellation for a period of one year) to give them time to carry out their plans. The Chuckwalla relief act benefited 780 entrymen, nearly 100 of who were situated within the PSPP vicinity. (Ex. 301, p. C.3-34.)

In 1909, at the start of the land rush, Brown's well was reportedly 300 feet deep, and plainly visible from the road, with two adobe buildings and a corral near it. A couple of years later, a man named Peter S. Gruendike settled in the valley not far west of the PSPP. Gruendike's well is in the same general vicinity of Brown's and may be one-and-the-same. Gruendike was an active entryman, publishing

an account of his Mountain View Experimental Ranch in *Out West* in 1911. By then, he had a good 10-foot-tall windmill in working order and a large tank, along with many kinds of trees planted and 300 or more palms of different kinds. At the time, he was very enthusiastic regarding the future outlook, having visions of growing hay, grain, melons, grapes, dates, cotton, and all citrus fruits. His land was patented in 1916. (Ex. 301, p. C.3-34.)

Stephen Ragsdale, a cotton farmer from Palo Verde Mesa, acquired Gruendike's property in 1915 and began operating a towing business at the establishment. Six years later, when Route 60 opened a mile or so to the north, he uprooted and founded the tiny settlement of Desert Center, midway between Indio and Blythe. Desert Center, at that time, consisted of a café with an attached gasoline station, a towing service/repair garage, a market, post office, several cabins for travelers, and a swimming pool. In addition to supporting tourism by providing sparse amenities for travelers, the local farming community, and a couple of mobile home parks. (Ex. 301, pp. C.3-34 to C.3-35.)

Automobiles began seriously replacing buckboards (four-wheeled wagons drawn by a horses or mules) about 1910. Because of bad roads, the high-centered Model-T became the vehicle of choice. At that time, no maps, road signs, or service stations existed. Venturesome motorists in Southern California, faced with these circumstances, banded together in 1900 to form a touring club and began publishing a monthly magazine with tips on travel and directions to popular destinations. As desert driving could be perilous, motorists began advocating for better information and road assistance. In 1917, the U.S. Geological Survey erected signs directing travelers to water at 167 localities in California's desert. The California Department of Engineering, after paving its first auto road in 1912, began issuing maps in 1918. (Ex. 301, p. C.3-35.)

In 1915, the Chuckwalla Valley Road was essentially ninety miles of blow sand and cross washes with a couple of ruts. It was not until 1936 that U.S. Highway 60-70 between Indio and Blythe was paved. In 1968, this highway became I-10, a major transportation corridor through the Chuckwalla Valley today, connecting Los Angeles and Phoenix. Most other roads in the area remained unpaved. (Ex. 301, p. C.3-35.)

The paucity of water in the desert prior to irrigation made agriculture a challenge. Plans to improve matters began as early as 1880s. Thomas Blythe, an investor from San Francisco, bank rolled the construction of a canal in the Palo Verde Valley, forty miles east of the PSPP. The water, taken from a swamp area called

Olive Lake, was used to irrigate pasturelands and small agricultural plots. With Blythe's death in 1883, no further agricultural development in the valley occurred until the turn of the century. In 1904, the Palo Verde Land and Water Company purchased the Blythe Estate and began the task of constructing additional canals and intake structures. As previously mentioned, the desert entrymen formed the Chuckwalla Valley and Palo Verde Mesa Irrigation Association in 1913. Flood damages inflicted by the Colorado River, however, necessitated the formation of the Palo Verde Joint Levee District in 1917. The Palo Verde Drainage District was later established in 1921. Two years later, the state legislature was petitioned to pass the Palo Verde Irrigation District Act in order to better administer both irrigation and drainage functions. (Ex. 301, p. C.3-35.)

In the first decade of the twentieth century, farmers in the Coachella Valley, west of the PSPP relied solely upon groundwater from artesian wells, planting extensive dates, figs, and grapes. By 1918, however, the water table had become seriously depleted. The Coachella Valley County Water District was subsequently formed to promote water conservation and control distribution. With completion of a new and improved "All-American Canal" to irrigate the Imperial Valley in 1940, communities in the Coachella Valley began forming plans to tap into it. The Coachella Canal, 122 miles long, was built nine years later. (Ex. 301, p. C.3-36.)

The Colorado River Aqueduct is a water conveyance structure operated by the Metropolitan Water District of Southern California. It impounds water from the Colorado River at Lake Havasu on the California-Arizona border west across the Mojave and Colorado deserts to the east side of the Santa Ana Mountains. Its construction, between 1933 and 1941, required an army of 5,000 men. It is recognized as one of the engineering marvels of the modern world and was nominated as a National Historic Engineering Landmark by the American Society of Civil Engineers. A portion of this aqueduct tunnels through the Coxcomb Mountains north of the Chuckwalla Valley and the PSPP. (Ex. 301, p. C.3-36.)

During the late nineteenth century, history was made generating and transmitting electricity in Southern California's Inland Empire. Pioneer engineers and entrepreneurs took the industry's first steps toward large capacity power plants and long distance power transmission nearly 125 years ago. Charles R. Lloyd and Gustavus Olivio Newman built California's first hydroelectric power plant in western Riverside County in 1887. It relied upon water from a canal in Highgrove at the base of a 50-foot elevation drop. It began by powering 30 outdoor arc

lights (15 in Colton and 15 in Riverside) from a direct current dynamo. (Ex. 301, p. C.3-36.)

In the early 1890s, direct current (DC) relied upon a distributed system involving many power plants and numerous short transmission lines because it was not practical to vary the voltage to meet differing consumer requirements for lighting and motorized appliances. Further, DC systems were inefficient because low-voltage transmission necessitated conveyance of high-currents through resistive conducting wires resulting in large energy losses. In contrast, alternating current (AC) relied upon a centralized system involving fewer power plants, long-distance transmission lines, and transformers to step down the voltage, essentially enabling the conveyance of high-voltages at low-currents, thereby reducing resistance and energy loss. (Ex. 301, pp. C.3-36 to C.3-37.)

In September of 1893, while the dominant electric companies were fighting over the emerging electric power standards (DC versus AC), the small community of Redlands, in San Bernardino County, managed to engineer and complete the first commercially viable power plant in the United States 1991. With the foresight of Almarian Decker, long-distance electric power transmission was achieved via transformers and the development of a revolutionary three-phase AC generator. Decker's power generation and delivery system was so successful that it became the Southern California standard. (Ex. 301, p. C.3-37.)

The first electricity came to Blythe in 1917. Two 50-watt diesel engines generated power 18 hours a day. It was not until 1930 that this system was abandoned when a 70-mile-long transmission line was constructed connecting Blythe with Calipatria in the Imperial Valley, where the line's main system was located. In the 1950s, the Blythe-Eagle transmission line was constructed. It was a 161-kV transmission line that connected the Blythe-Eagle Mountain Substation in Blythe to a substation near Eagle Mountain. The other transmission line in the vicinity of the PSPP is the Devers-Palo Verde- line, a 500-kV lattice-tower transmission line constructed in 1982. It connects a plant in Arizona with a substation near Palm Springs. (Ex. 301, p. C.3-37.)

Riverside County is known mostly for its sporadic, small-scale mining of gold, silver, lead, copper, uranium, fluorite, and manganese. Large numbers of prospectors were attracted to the region during the gold boom in La Paz (in western Arizona, approximately six miles north of present-day Ehrenberg) in 1862. Not long after, miners began combing the mountains on either side of the Chuckwalla Valley. Gold was being mined as early as 1865 in the Eagle

Mountain District northwest of the PSPP. Much later, in the late 1940s, Kaiser Steel began a large-scale iron ore mining operation in the Eagle Mountains. In the Granite Mountains to the north-northwest, there was a short stint of gold mining beginning in 1894, followed by a resurgence in the late 1920s by the Chuckwalla Mining and Milling Corporation. Copper mining occurred in the Palen Mountains to the northwest during the second decade of the twentieth century. Most of these mines were abandoned by 1917. (Ex. 301, pp. C.3-37 to C.3-38.)

The short-lived Pacific Mining District was established in 1887, in the Chuckwalla Mountains, south of the PSPP, following gold and silver discoveries that caused the most substantial rush to Riverside County in its history. Sixty claims were filed by the end of the year, but the boom fizzled by 1890 because the owners never had enough capital to work them properly. About 1898, some 40 claims in the area were taken up by the Red Cloud Mining Company. In 1901, a force of 50 men worked there. The company installed a new hoist and a 30-ton mill, and was raising money through stock offerings to construct a tram from the mine to the mill. The company changed hands some time before 1915, however, and soon folded. Just prior to this, half-a-dozen prospectors began working the Chuckwalla Placer Diggings near Chuckwalla Springs, three miles south of the PSPP. This lasted about fifteen years. The Red Cloud Mine was later resurrected, in 1931, when a small amalgamation plant was built, and continued operations until 1945. (Ex. 301, p. C.3-38.)

A review of the BLM's National Integrated Land System (NILS) GeoCommunicator website, showed a cluster of closed placer mining claims within the PSPP. Additional information on these claims is currently being sought regarding claimants and date ranges of claims. (Ex. 301, p. C.3-38.)

In 1942, during World War II, Gen. George S. Patton established the Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA) in a sparsely populated region of southeastern California, Arizona, and Nevada. Its purpose was to prepare tank, infantry, and air units for the harsh conditions of North Africa, practicing maneuvers, developing tactics, and field testing equipment. The installation, in operation for two years (until the end of the war), was 16,000 square miles in extent. It was the first simulated theater of operations in the United States. Its location was chosen for its unforgiving desert heat, rugged terrain, available telephone communications system, and accessibility by established railroads and highways. (Ex. 301, p. C.3-38.)

Seven camps were established for divisional use. Camp Young, near Indio, served as the main headquarters. Camp Desert Center was located between Chiriaco Summit and the community of Desert Center. It encompassed 34,000 acres, consisting of an encampment with temporary housing structures, an evacuation hospital, observers' camp, an ordnance campsite, quartermaster truck site, and maneuver area. The Desert Center Army Airfield was situated just northwest of the community of Desert Center. It contained two paved runways, more than 40 buildings (officer's quarters, a mess hall, a dispensary, a headquarters building, a recreation hall, a link trainer building, a hangar, various supply buildings, an operations building, a power house, a pump house, a control tower), a well, and a 10,000-gallon water tower. (Ex. 301, p. C.3-39.)

In 1986, BLM planned to nominate each of the seven division camps to the NRHP, to develop an interpretive program for the DTC/C-AMA, and to provide historical resources protection through designation as an Area of Critical Concern (ACEC). Subsequently, in considering the historical and archaeological contexts for the DTS/C-AMA, it was found that it was a historically significant resource under all four criteria of the NRHP. As such, it was recommended that the facility be nominated to the NRHP as a discontiguous district of clearly functionally and temporally related resources. It was further proposed that the facility be recorded as multiple properties consisting of contributing and noncontributing elements of the district. DTC/C-AMA can be thought of as an interconnected landscape of WWII training sites that are highly significant for their association with Gen. George S. Patton and for their contributions to our understanding of how American soldiers were trained during WWII. (Ex. 301, p. C.3-39.)

2. Cultural Resources

The area that Staff considers when identifying and assessing impacts to important cultural resources, called the "project area of analysis" (PAA), is a composite geographic area that accommodates the analysis of each type of cultural resources that is present. The PAA can vary depending on the type of cultural resources under analysis and is usually defined as a specific area within and surrounding the project site and associated linear facility corridors. For the proposed PSPP, the PAA for the following cultural resources types is defined as follows:

For archaeological resources, the PAA for the proposed project is defined as the proposed project site footprint, plus a buffer of 200 feet, the project linear facilities routes plus 50 feet to either side of the route, and the maximum depth

that would be reached by all foundation excavations and by all pipeline installation trenches. This definition serves to address impacts on resources whose dimensions may well extend below the surface and beyond the project site.

For ethnographic resources, the PAA for the proposed project is expanded to take into account traditional use areas and traditional cultural places which may be further afield than the project site footprint or the project vicinity. The areas of analysis for ethnographic resources may include viewscapes that contribute to the historical integrity of a subject resource. Ethnographic resources are often identified in consultation with Native Americans as well as other ethnic or cultural communities, and issues that are raised by these communities may define the PAA. For this project the ethnographic PAA is the geographic area around and including the proposed project where the project has the potential to physically or visually degrade ethnographic resources.

For built-environment resources in the rural context of the proposed project, the PAA is defined as the project site and any above-ground linear facilities, plus a half-mile buffer. As this project is located in an undeveloped area, the PAA was reduced to include only the above-ground linear facilities and a half-mile buffer.

The Applicant's records search included all known cultural resources within the PAA. Sources checked included:

- The Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS);
- Previously documented cultural resources or archaeological studies in the project area;
- National Register of Historic Places (NHRP);
- California Register of Historical Resources (CRHR);
- California State Historical Landmarks;
- California Points of Historical Interest; and
- California Inventory of Historic Resources; and
- BLM Cultural Areas of Critical Environmental Concern (ACEC)

The CHRIS literature and records search identified 12 previous studies within the study area (including the buffer area outside the archaeological PAA). Based on the evidence, it appears that less than one percent of the archaeological PAA has been previously surveyed. Four studies, related to Southern California Edison's Devers-Palo Verde- transmission lines, were conducted north of the

archaeological PAA. These same four studies reported on a linear corridor south of the archaeological PAA. Three additional linear studies, south of the archaeological PAA, include two along I-10 related to a pipeline project and a safety project and a fiber optic project along Chuckwalla Road. Several localized surveys, scattered both in and out of the archaeological PAA, relate to geotechnical boring and pole replacement projects. The remaining investigations include a survey along Corn Springs Road (Martinez and a reconnaissance along the dunes on the southeast edge of Palen Dry Lake. (Ex. 301, p. C.3-42.)

Twelve previously recorded resources were identified within the study area, seven historic-period and five prehistoric archaeological sites (see **Cultural Resources Table 1**, below). These include: a segment of historical Chuckwalla Road, four early-twentieth-century tin can scatters and two isolates (a tin can and a 1940s general infantry periscope-style flashlight). (Ex. 301, p. C.3-43)

CULTURAL RESOURCES Table 1
Previously Recorded Sites within the Study Area (Records Search Limits)

Period	Primary # (P-33-)	Site Trinomial (CA-Riv-)	Site Type	Constituents
Historic	13592		Tin can scatter	Church-key opened beverage cans, juice cans, meat tins
	13681		Isolate	Hole-in-cap can
	13964	7648	Tin can scatter & section marker	Tin cans & wood fragments
	14161		Isolate	General Infantry periscope style flashlight
	17137	8920	Tin can & glass scatter	Hole-in-top cans, evaporated milk cans, glass fragments
	17138	8921	Tin can & glass scatter	Tins cans, glass fragments, and milled lumber
	17766		Road Segment	Rte 60/70 w/ associated diversion dikes (Chuckwalla Rd)
Prehistoric	n/a	893T	Trail Segment	none
	n/a	1515	numerous widely dispersed loci of sparse lithics & FAR (fire-affected rock) scatters over an extensive area	FAR, core fragments, flakes, cores, hammer-stones, cobble chopper tools, millingtools, bone fragments, projectile point, pottery shards, turquoise pendant, and ring of boulders. Rumored fishhooks, fish bone, and possible human remains (burials and cremations).
	13591		Isolate	Quartzite biface
	14160		Isolate	Incised pottery rim sherd and body sherd
	14177		Cleared Circle Ring	none

Source: (Ex. 301, p. C.3-43, Table 3.)

Five prehistoric resources were identified outside the archaeological PAA. Four, south of the project area, included: a remnant of a foot trail (CA-Riv-893T); a pottery sherd scatter (P-33-14160); a rock ring (P-33-14177); and an isolated quartz biface fragment (P-13591). One very large seasonal campsite, CA-Riv-1515, was identified and recorded, less than 0.5 mile to the northeast of the PAA. (Ex. 301, p. C.3-44.)

CA-Riv-1515 is situated within low dunes bordering the east edge of Palen Dry Lake bed. It is characterized as an extensive elongated scatter of cultural materials over approximately three miles of the playa. The site boundaries, as delineated, incorporate many small localities of activity. Noted associated artifacts included: scatters of fire-affected rocks, milling tools (mano and metate fragments), flakes of chalcedony, quartzite, and basalt, toolstone core detritus, a Rose Spring projectile point, isolated pottery sherds (probably Tizon Brown ware), quartzite hammerstones, quartzite cobble chopper-tools, scattered bone fragments (rabbit, tortoise, and large mammal), and a ring of boulders. Anecdotal information suggests that fish bone and fishhooks also occur, along with burials and/or cremations, and beads. A probable turquoise pendant was found in 1975 at the north end of the site. (Ex. 301, p. C.3-44.)

An Area of Critical Environmental Concern (ACEC) management plan and environmental assessment was prepared in 1981 for Palen Dry Lake and CA-Riv-1515. The ACEC is situated adjacent to the PSPP in an area encompassing 5.3 square miles. (Ex. 301, p. C.3-44.)

Further afield, outside the CHRIS study area, two other prehistoric sites associated with the northwest section of Palen Dry Lake, were found during a cultural resources inventory of the Central Mojave and Colorado Desert regions (no numerical designations were assigned). Typical archaeological remains underlying the dunes in that vicinity include coarse abraders of basalt and chert, along with flakes of fine quality chalcedony and obsidian, as well as a few pottery sherds. Notes associated with a collection of about 300 artifacts (mostly chipped stone, some ground stone, a few pottery sherds, and an unworked piece of turquoise) archived at the University of California Los Angeles (Accession No. 320), describe two areas: Area A (0.5 mile square at the northern edge of the lake) and Area B (located half a mile to the south of Area A). (Ex. 301, pp. C.3-44 - C.3-45.)

Eight miles west-northwest of the PSPP, a major aplite toolstone quarry (CA-Riv-1814) was found during investigations for the Devers-Palo Verde

transmission line study. It was determined eligible for the NRHP. Also recorded during that study was a very large site (CA-Riv-1383) spread over 45 acres, with 33 loci, including 10 rock rings, 3 cleared circles, 170 petroglyphs, 3 trails, 79 potsherds, and sparse lithic scatters containing 193 flakes of aplite and quartzite. This site was also determined eligible for the NRHP. (Ex. 301, p. C.3-45.)

Along with conducting the records search, the Applicant's consultant, AECOM, also visited both the General Patton Memorial Museum (on April 30, 2009) and the Palo Verde Historical Museum and Society (May 4–5, 2009) in order to learn more about regional history. The General Patton Museum is located at Chiriaco Summit near Desert Center and contains information about the Desert Training Facility and other military history related to the project area. The Palo Verde Museum, in Blythe, houses information on the history of the region, focusing heavily on the development of the Blythe community, as well as a comprehensive collection of local periodicals. (Ex. 301, p. C.3-45.)

AECOM also performed other archival research, including the examination of historic topographic maps including: *Chuckwalla Mountains* (1:50,000 scale, 1947); *Sidewinder Well* (1:62,500 scale, 1952); *Palen Mountains* (1:48,000 scale, 1943); and *Hopkins Well* 1:48,000, 1943). In addition, other historic maps were accessed online from California State University, Chico and the University of Alabama. Also reviewed were maps from the Malcolm Rogers collection on file at the Museum of Man in San Diego. (Ex. 301, p. C.3-45.)

Staff performed additional archival research, visiting the University of California, Davis Shields Library. Staff conducted additional on-line searches for historic maps depicting the project area. The following maps were examined:

- Beale (1861), Map of Public Surveys in California, Scale 1:1,140,000.
- American Photo-Lithographic Company (1865), California, Scale 1:5,069,000.
- Asher and Adams (1872), California and Nevada- South Portion, Scale 1:1,267,000.
- Williams (1873), Map of California and Nevada, Scale 1:3,485,000.
- Colton (1873), Colton's California and Nevada, Scale 1:2,091,000.
- Mitchell (1875), Map of the State of California, Scale 1:2,408,000.
- Hardesty (1882), Map of California and Nevada, Scale 1:2,000,000;
- Hardesty (1883), Map of Southeastern California, Scale 1:1,140,000.

- Rand McNalley (1884), California, Scale 1:2,028,000.
- Punnett Brothers (1897), Map of the State of California, Scale 1:2,218,000.
- Rand McNalley (1897), California, Scale 1:1,190,000.
- U.S. Geological Survey (1914), Lithologic Map of California, Scale 1:2,000,000.
- Smith (1916), Geological Map of the State of California, Scale 1:760,320.

AECOM acquired historical data on the project vicinity, but identified no additional cultural resources in or near the PSPP PAAs. Staff accessed additional historical information from the University of California Davis library and documents available online. (Ex. 301, p. C.3-46.)

California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. To facilitate the environmental review of their projects, applicants acquire information on locally recognized cultural resources specific to the vicinity of their project by consulting local planning agencies and local historical and archaeological societies. (Ex. 301, p. C.3-46.)

AECOM contacted various local historical societies, museums, and research institutions requesting information for the project footprint and surrounding area. The following institutions were contacted by both formal letter (dated June 1, 2009) and follow-up phone call (on July 17, 2009): General Patton Memorial Museum; Historic Resources Management Programs, University of California, Riverside; Palm Springs Historical Society; Palo Verde Historical Museum and Society; and Riverside County Historical Commission. AECOM also visited the BLM office in Palm Springs on May 4, 2009, in order to examine the General Land Office (GLO) plat maps for the PSPP, desert land entries, and various survey reports. (Ex. 301, p. C.3-46.)

AECOM received no responses from the various historical societies, museums, and research institutions contacted. Since the PSPP is located on BLM land, a Fieldwork Authorization Request form was filed and approved on March 10, 2009. Contact with the CEC is ongoing to coordinate project activities. (Ex. 301, p. C.3-46.)

The Native American Heritage commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to

California Native Americans, referred to by Staff as Native American ethnographic resources. The NAHC's Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. (Ex. 301, p. C.3-46.)

The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas. Both Applicant and Staff request information from the NAHC on the presence of sacred lands in the vicinity of the proposed PSPP and also request a list of Native Americans to whom inquiries will be made to identify both additional cultural resources and any concerns the Native Americans may have about a proposed project. (Ex. 301, p. C.3-47.)

AECOM contacted the NAHC on April 13, 2009, requesting a list of local Native Americans who might have concerns about the PSPP and a search of the Sacred Lands Files for any known resources that might be affected by project impacts. The NAHC responded on April 20, 2009, indicating that one resource is located within a 1.0 radius of the PSPP [believed to be archaeological site CA-Riv-1515] and supplied AECOM with a list of individuals representing local Native American communities. (Ex. 301, p. C.3-47.)

AECOM corresponded with local Native Americans by letters dated May 5, 2009. **Cultural Resources Table 2** provides a list of those contacted, their affiliations, and responses, if any. Among those contacted were individuals from the Luiseño (Pauma Valley Band), Cahuilla (Cahuilla Band, Agua Caliente Band, Torres-Martinez Band, Ramona Band, Morongo Band), Serrano (San Manuel Band and Morongo Band), Mohave (Fort Mojave AhaMaKav Cultural Society and Colorado River Indian Tribes), and the Chemehuevi (Twentynine Palms Band and Chemehuevi Reservation, Colorado River Indian Tribes) tribes. Follow-up phone calls were made on July 8 and July 28, 2009, with all identified Native American groups/individuals. (Ex. 301, p. C.3-47.)

CULTURAL RESOURCES Table 2
Summary of Applicant's Native American Consultation

Contact	Affiliation	Sent	Response
Joseph R. Benitez	None provided by NAHC	Letter (5/5/2009)	6/17/2009 Indicated Chemehuevi Tribe should be contacted
Ann Brierty	San Manuel Band of Mission Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
Bennae Calac, Tribal Council Member	Pauma Valley Band of Luiseño Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/30/2009)	None to date Requested information packet be resent (Sent 7/8/2009) (7/10/2009) E-mail requesting continued consultation about concerns for the Project area Asked to call at later date
Daryl Mike Chairperson	Twentynine Palms Band of Mission Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
Diana L. Chihuahua, Cultural Resources Coordinator	Torres-Martinez Desert Cahuilla Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
Michael Contreras, Cultural Heritage Program Manager	Morongo Band of Mission Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date No comment to date Referred to Torres-Martinez
Joseph Hamilton, Chairman	Ramona Band of Cahuilla Mission Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
John A. James, Chairperson	Cabazon Band of Mission Indians	Letter (5/5/2009) Phone (7/8/2009)	None to date Referred to David Roosevelt
Linda Otero, Director	AhaMaKav Cultural Society, Fort Mojave Indian Tribe	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date Will contact with information
James Ramos, Chairperson	San Manuel Band of Mission Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
Mary Resvaloso, Chairperson	Torres-Martinez Desert Cahuilla Indians	Letter (5/5/2009) Phone (7/8/2009) Response (7/14/2009)	None to date Requested information packet be resent (Sent 7/14/2009)
Luther Salgado, Sr.	Cahuilla Band of Indians	Letter (7/8/2009) Phone (7/28/2009)	None to date Number disconnected
Alvino Silva	None provided by NAHC	Letter (5/5/2009) Phone (7/8/2009)	None to date Left message, call returned on 7/9/2009

Contact	Affiliation	Sent	Response
Judy Stapp, Director of Cultural Affairs	Cabazon Band of Mission Indians	Letter (5/5/2009) Phone (7/8/2009)	5/18/2009 – No comment
David Roosevelt, Chairperson	Cabazon Band of Mission Indians	Phone (7/82009) Phone (7/28/2009)	None to date Will contact with information
Michael Tsosie	Colorado River Reservations	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
Patricia Tuck, THPO	Agua Caliente Band of Cahuilla Indians	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date
Tim Williams, Chairperson	Fort Mojave Indian Tribe	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date Requested information packet be resent (Sent 7/8/2009) Referred to Linda Otero
Charles Wood, Chairperson	Chemehuevi Reservation	Letter (5/5/2009) Phone (7/8/2009) Phone (7/28/2009)	None to date

Source: (Ex. 301, pp. C.3-47 to C.3-48, Table 4.)

With the Applicant's filing of an application for a Right of Way (ROW) grant, the Field Office Manager and the archaeologist at the BLM Palm Springs Field Office undertook formal, government-to-government tribal consultation pursuant to the NHPA Section 106, as well as other laws and regulations. While the BLM must formally consult, government-to-government, with the federally recognized Native American tribes that have traditional cultural ties to the area in which the project is located, the Energy Commission's environmental review process is open to all interested parties, including all Native American groups and individuals whom the NAHC identifies as having an interest in development in the area, whether federally recognized or not. To cooperate with the Energy Commission, BLM expanded their consultation to include Native American groups not recognized by the federal government. They initiated consultation in the early stages of project planning by certified letter on July 1, 2009. (Ex. 301, pp. C.3-48 - C.3-49.)

Tribes were invited to a general scoping meeting and project site visit held on January 25, 2010. On February 10, 2010, the BLM Palm Springs Field Office Manager John Kalish and Palm Springs Field Office Archaeologist George Kline met with the Fort Yuma Quechan Tribal Council. They provided information on several solar energy projects, including the PSPP, and answered questions. Letters requesting consultation among tribes, the Energy Commission, the Applicant, the State Historic Preservation Officer, and the Advisory Council on

Historic Preservation to develop a cultural resources Programmatic Agreement (PA) for the PSPP were mailed out to the below-listed tribes on March 3, 2010. (Ex. 301, p. C.3-49.)

An initial meeting regarding the PA was held on April 23, 2010 in Palm Desert, to which all interested tribes were invited. They were also notified of a workshop on the PSPP SA/DEIS, held on April 29, 2010, in the BLM Palm Springs Field Office, where, additionally, BLM also held an informational meeting for the tribes on May 25, 2010. The BLM issued a draft cultural resources PA for PSPP on June 17, 2010, allowing 30 days for public and Native American comment. Most recently, BLM held a meeting in Palm Desert on August 11, 2010, to review and discuss the revised draft PAs for PSPP and the two other nearby proposed solar projects, and some Native Americans were in attendance. At this meeting, representatives of California's for Renewable Energy (CARE) and of La Cuna de Aztlan Sacred Sites Protection Circle expressed concern over geoglyphs and other sacred sites and ancient trails that solar development in the Chuckwalla Valley and on Palo Verde Mesa could affect. (Ex. 301, p. C.3-49.)

To date, thirteen tribes or related entities have been identified and invited to consult on this project, including those listed below.

- Ramona Band of Mission Indians
- Torres-Martinez Desert Cahuilla Indians
- Augustine Band of Cahuilla Mission Indians
- Agua Caliente Band of Cahuilla Indians THPO
- Morongo Band of Mission Indians
- Twentynine Palms Band of Mission Indians
- Fort Yuma Quechan Indian Tribe
- Colorado River Indian Tribes
- Chemehuevi Reservation
- Colorado River Reservation
- San Manuel Band of Mission Indians
- Quechan Indian Tribe
- Fort Mojave Indian Tribe

AECOM has received few comments to date. The Luiseño Council Member requested continued consultation by email on July 10, 2009. As a result of

consultation efforts, Native Americans have identified no additional cultural resources that could be impacted by the PSPP. (Ex. 301, p. C.3-50.)

The BLM is in ongoing discussions with the various tribal entities for the development of the PSPP cultural resources PA. A log of BLM's consultation with specific individuals/groups is provided in Appendix I of the "Draft Palen Solar Programmatic Agreement," dated June 18, 2010. Native American comments and recommendations will be included both in BLM's PSPP FEIS and PSPP PA. (Ex. 301, p. C.3-50.)

AECOM conducted surveys to identify previously unrecorded cultural resources in the PAAs. These surveys include a pedestrian archaeological surface survey, a geoarchaeological subsurface investigation, and a built-environment windshield survey. (Ex. 301, p. C.3-50.)

Pedestrian surveys of the PSPP were conducted in several stages:

- The main project footprint and originally proposed transmission line/substation siting was surveyed by AECOM April 13–May 6, 2009, and October 14–26, 2009;
- Portions of a new transmission line and transmission line alternative were surveyed by AECOM in May, 2010;
- Other portions of the new and alternative transmission line routes, the new and alternative substation locations, and the alternative substation access road route were surveyed by ECORP for the Desert Sunlight Project; and
- A survey of the redundant telecommunications line route has not been conducted as of this writing.

AECOM surveys were conducted using four-to-eight-person teams each led by a crew chief. These teams maintained transect-spacing of 20 meters or less. Identified sites and/or isolates were flagged and recorded, their positions determined with handheld global positioning system (GPS) units. An arbitrary distance of 50 meters between artifacts and features was used to create boundaries between individual sites. Sites were defined as four or more artifacts within a boundary; isolates were defined as three or fewer artifacts. Temporary recording forms were completed in the field as the sites and isolates were identified, and additional intensive survey was conducted with three-meter intervals to fully delineate site boundaries. Flags were removed immediately after recordation. (Ex. 301, pp. C.3-50 to C.3-51.)

64 resources were found during their field investigations of various components of the PSPP (the facility footprint, surrounding temporary disturbance area, access roads, transmission line, and substation footprint). These included 1 historic structure, 9 prehistoric and 54 historic-period archaeological sites. (Ex. 301, p. C.3-51.)

Nine prehistoric sites were identified during field investigations within the different components of the project (facility footprint, facility access roads, temporary disturbance area, transmission line corridor, substation footprint, and substation access road), including five sparse lithic scatters and four sparse lithic and fire-affected rock (FAR) scatters (**Cultural Resources Table 3**). (Ex. 301, p. C.3-51.)

CULTURAL RESOURCES Table 3
Newly Discovered Prehistoric Resources within the Archaeological PAA

Site Ref. (SMP-P-)	Resource Type	Size (m)	Landform	Constituents	Other
1015	Lithic scatter	90x30	Gravel terrace	31 flakes & 2 cores (cryptocryst, metavolcanic, basalt, rhyolite)	Surficial
1016	Lithic scatter	45x25	Gravel terrace	7 flakes (cryptocryst, metavolc, basalt, quartz)	Surficial
1017	Lithic & FAR scatter	50x18	Deflated dune terrace	3 flakes (metavolcanic), quartzite hammerstone, piece ground stone, 60+ FAR frags	Possible subsurface deposit
1018	Lithic & FAR scatter	25x9	Deflated dune terrace	13 pieces metavolcanic debitage, 35 pieces FAR, metate frag	Possible subsurface deposit
2014	Lithic scatter	30x20	Dune	3 flakes & core (metavolcanic)	Possible subsurface deposit
2015	Lithic & FAR scatter	47x22	Dune at base of alluvial fan	40+ flakes (metavolc, cryptocryst), biface frag (basalt), domed scraper, core, 4 metate frags, 2 poss. metate frags, boulder with ground surface, and marine shell frag	Possible subsurface deposit

Site Ref. (SMP-P-)	Resource Type	Size (m)	Landform	Constituents	Other
2018	Lithic & FAR scatter	54x28	Deflated dune on periphery of Dry Lake	Five clusters of FAR (126 pieces of basaltic, metavolcanic, and granitic rocks), a metavolcanic primary flake, cryptocrystalline biface-thinning flake, a quartz secondary flake, a metavolcanic hammerstone/ battered cobble	Possible subsurface deposit
2023	Lithic & FAR scatter	75x16	Alluvial fan	2 flakes, core, 8 metate fragments, 1 mano, & 6 pieces of FAR	Possible subsurface deposit
MT-001	Lithic scatter	60x20		1 rhyolite core/chopper, 1 rhyolite tested cobble, and 1 rhyolite core	Historic component, mid-20th century can scatter and one screw-top glass bottle

Source: (Ex. 301, pp. C.3-51 to C.3-52.)

Historic-period resources include 54 sites, 35 of which are refuse scatters dating from the 1880s to 1950s (most originating between 1920s and 1940s), composed primarily of tin cans and minor amounts of glass fragments. Two of these scatters are situated adjacent to WWII tank tracks, but associations have not been established. The refuse scatters include food cans, tobacco tins, bottles, jars, oil cans, and automobile parts. The remaining 19 sites include three other segments of tank tracks, three possible placer mining claims, two survey markers, one corral, one road, five prospecting quartz reduction loci, and four rock cairn features. (Ex. 301, p. C.3-52.)

Geoarchaeological monitoring of a geotechnical investigation within the PSPP archaeological PAA took place July 20–28, 2009. Excavations of 12 boreholes and eight test pits were observed for presence/absence of paleosols, archaeological artifacts, or other evidence of archaeological deposition. Stratigraphic samples were collected for sedimentological and mineralogical data. Test pits, 1.5–3 meters deep, were placed in locations where deep footings or weight-bearing loads are planned. No cultural resources were found, and no evidence of subsurface paleosols or cultural deposits was noted during the course of monitoring. (Ex. 301, pp. C.3-57 to C.3-58.)

Observations of the surface topography and subsurface deposits from the test pits suggest that the site is dominated by a roughly 10–33-centimeter-thick veneer of soil (A horizon) formed in fluvial (re-worked alluvial fan deposits) and eolian (wind-deposited) sands and fluvial gravels originating from the Pleistocene alluvial fans of the surrounding mountain slopes. A-horizon soils consist of olive gray gravelly sand with sparse roots, sub-angular pebbles, angular blocky structure, and a clear wavy boundary. The C-horizon consists of a C1 horizon of storm couplets overlaying a C2 and C3 horizon of alluvial and dune sands, as well as alluvial gravels. Data from the borings indicate that the deeper subsurface deposits, below three meters, consist of alluvial fan sand and gravels that appear to represent alluvial fan transgression and aggradation, and clay that likely correlates to transgression of early lacustrine (lake) deposits during glacial periods and stable phases of the coalescing alluvial fans. (Ex. 301, p. C.3-58.)

Based on the evidence, the potential for buried shallow archaeological deposits is highest within the northeast quadrant of the archaeological PAA, where wave-cut platforms of paleo-lacustrine and beach deposits were observed beneath dune deposits, less than a meter below the surface. Within the remainder of this PAA, if buried deposits are present, they are more likely to be deeper (up to 20 feet), due to the greater depth of alluvial fan deposition. Archaeological deposits at depth, within the alluvial fan deposits, have the potential to be heavily disturbed by millennia of alluvial fan transgression and erosion processes. Over the last 80 years, however, dikes, constructed on the upslope side of U.S. Route 60/70 in the 1930s, have protected this area by diverting storm water runoff. (Ex. 301, p. C.3-58.)

Windshield surveys were conducted for the built-environment PAA on May 1, 2009 and in May 2010. Five resources were identified including: two wooden bridges built in 1931, a transmission line from the late 1950s, a school house dating to around 1935, and a complex of residential buildings and structures built between the 1920s and 1950s. These are referenced, respectively, as the Aztec Ditch Bridge (Caltrans Bridge 56C0102), the Tarantula Ditch Bridge (Caltrans Bridge 56C0103), the Blythe-Eagle Mountain 161-kV transmission line (SMP-H-1024), the Desert Center School House (P-33-6833), and SMP-B-MKM-001. With the exception of the transmission line, none are considered to be in the Area of Direct Disturbance. (Ex. 301, p. C.3-58.)

3. Potential Impacts to Cultural Resources

CEQA requires the Energy Commission, as a lead agency, to evaluate the historical significance of cultural resources by determining whether they meet several sets of specified criteria. Under CEQA, the definition of a historically significant cultural resource is that it is eligible for listing in the CRHR, and such a cultural resource is referred to as a "historical resource," which is a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR", or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of section 5024.1 (g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record" (Cal. Code Regs., tit. 14, § 15064.5(a)). The term, "historical resource," therefore, indicates a cultural resource that is historically significant and eligible for the CRHR.

Consequently, under the CEQA Guidelines, to be historically significant, a cultural resource must meet the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, [1] a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, § 5024.1):

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

[1] The Office of Historic Preservation's Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a potential five-year lag in the planning process.

Historical resources must also possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance. [Cal. Code Regs., tit. 14, § 4852(c).]

Additionally, cultural resources listed in or formally determined eligible for the National Register of Historical Places (NRHP) and California Registered Historical Landmarks numbered No. 770 and up are automatically listed in the CRHR and are therefore also historical resources. (Pub. Resources Code, § 5024.1(d).) Even if a cultural resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows a lead agency to make a determination as to whether it is a historical resource. (Pub. Resources Code, § 21084.1.) (Ex. 301, p. C.3-60.)

Direct impacts to cultural resources are those associated with project development, construction, and co-existence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic resources when those structures must be removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

Generally speaking, indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction creates improved accessibility and vandalism or greater weather exposure becomes possible.

Staff focused evaluation efforts on the 64 resources expected to be directly impacted by the PSPP. Resources were deemed eligible or ineligible if sufficient data were available to support conclusions. If existing data were insufficient, resources were assumed eligible. The goal was to determine which if any of these resources were ineligible so avoidance or mitigation would be unnecessary. Of the resources evaluated, Staff concluded that the proposed

project would have a significant direct impact on 49 resources either recommended eligible or assumed eligible for either the National Register of Historic Places and/or California Register of Historical Resources. These impacts include:

- Direct impacts to nine prehistoric archaeological sites, all potential contributors to a prehistoric cultural landscape (historic district) identified by Staff and designated as the Prehistoric Trails Network Cultural Landscape (PTNCL);
- Direct impacts to 40 historic-period archaeological sites, some of which are potential contributing elements to a historic-period cultural landscape (historic district) identified by Staff and designated as the World War II Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL); and
- Cumulative impacts to the PTNCL and the DTCCL, resulting from the PSPP's impacts to contributors to these assumed register-eligible resources.

These Staff-assumed register-eligible resources and recommended mitigation are listed in Staff's **Cultural Resources Table 9**, found in Exhibit 301 at pages C.3-91 to C.3-92. We hereby adopt all Staff-recommended Conditions of Certification as set forth in **Table 9** to reduce impacts to cultural resources to below a level of significance.

To mitigate PSPP's direct impacts, we adopt Staff-recommended Cultural Resources Conditions of Certification **CUL-3** through **CUL-15**. **CUL-3** identifies the people who would implement all of the Conditions (except for **CUL-1** and **CUL-2)**, and **CUL-4** specifies the information the project owner would supply to them. **CUL-5** provides for the preparation and implementation of the Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation of the broader treatment program. **CUL-6** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the whole PSPP Cultural Resources Management Program. **CUL-7** would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the project construction area. **CUL-8** and **CUL-9** would provide construction monitoring and cultural resources discovery protocols. **CUL-10** through **CUL-15** are treatment Conditions for direct impacts to historic-period and prehistoric resources that would reduce the severity of PSPP impacts to less than significant.

In conclusion, with the adoption and implementation of Staff's recommended Cultural Resources Conditions, the PSPP would be in conformity with all applicable LORS. **CUL-1** and **CUL-2**, which we also adopt, would reduce the project's cumulative impacts to the PTNCL and DTCCL to the greatest extent possible, but those impacts would still be cumulatively considerable. **CUL-3** through **CUL-15** would reduce the direct impacts to less than significant.

Conditions of Certification **CUL-1** through **CUL-15** reflect our determination of what constitutes appropriate mitigation, under the California Environmental Quality Act, for PSPP's identified impacts to register-eligible cultural resources. We recognize that BLM's parallel but different process for resolving adverse project effects (consultation resulting in a PA) may result in different conclusions regarding cultural resources evaluations, the nature and severity of project impacts, and appropriate mitigation measures. The Commission will work with the BLM to incorporate our adopted Conditions of Certification into the PSPP PA and its associated plan documents.

4. Alternatives

<u>Reconfigured Alternative #2</u>

Reconfigured Alternative #2 would be a 500-MW solar facility, like the proposed project. Solar Unit 2 would remain as proposed for the proposed project, but proposed Unit 1 (the eastern solar field) would be reconfigured to avoid use of the northeastern third of the proposed field. This change would result in a triangular-shaped field trending southeast. This reconfigured eastern solar field would be located partially on public land managed by BLM, partially on a 40-acre private parcel on which the Applicant has a purchase option, and partially on two privately owned parcels not currently controlled by Applicant. The overall disturbance area for Reconfigured Alternative #2 would be approximately 4,365 acres.

This alternative was analyzed because:

- It would retain the 500 MW generation capacity defined for the proposed project;
- It would reduce impacts to the sand dune habitat of the Mojave Fringe-Toed Lizard, an endangered species, in the northeastern portion of the proposed site;
- It would reduce impacts to the sand transport corridor; and
- The engineering is feasible.

Because Reconfigured Alternative #2 is in the same general location as the proposed project, the cultural resources setting would be the same as for the proposed project.

Reconfigured Alternative #2 would impact all the resources discussed above for the proposed project, with the addition of 12 assumed-eligible resources including: nine historic-period refuse scatters, two placer mining claim marker (one with associated refuse), and a temporary military camp (SMP-H-1012; JR-104, JR-107, JR-108; DS-5, DS-7, DS-14, DS-17, DS-24, DS-41, DS-44, and DS-45). The level of significance of project impacts under CEQA for Reconfigured Alternative #2 would be the same as for the proposed project, with the same significance rationale, which recognizes a potential for significant construction-related impacts to eligible and assumed-eligible cultural resources.

Mitigation for potential impacts from Reconfigured Alternative #2 would be the same as that recommended for the proposed project: Conditions of Certification **CUL-1** through **CUL-16**, discussed below.

Reconfigured Alternative #3

Reconfigured Alternative #3 would be a 500-MW solar facility, like the proposed project. Solar Unit 2 would remain as proposed for the proposed project, but proposed Unit 1 (the eastern solar field) would be reconfigured to avoid use of the northeastern third of the proposed field. This change would result in a triangular-shaped field trending southeast. This reconfigured eastern solar field would be located primarily on public land managed by BLM, however, as with the proposed project, it would include a 40-acre private parcel on which the Applicant has a purchase option. The overall disturbance area for Reconfigured Alternative #3 would be approximately 4,330 acres.

This alternative is analyzed because:

- It would retain the 500 MW generation capacity defined for the proposed project;
- It would reduce impacts to the sand dune habitat of the Mojave Fringe-Toed Lizard, an endangered species, in the northeastern portion of the proposed site;
- It would reduce impacts to the sand transport corridor;
- It would not require use of private land not currently controlled by the Applicant; and

- The engineering is feasible.

Because the Reconfigured Alternative #3 is in the same general location as the proposed project, the cultural resources setting would be the same as for the proposed project.

Reconfigured Alternative #3 would impact all the resources discussed above for the proposed project, but with the addition of 12 more assumed-eligible resources, including: nine historic-period refuse scatters, one placer mining claim marker, a temporary military camp, and a prehistoric ceramic scatter (SMP-H-1012; JR-104; DS-5, DS-7, DS-14, DS-17, DS-24, DS-28, DS-41, DS-44, DS-45, and DS-P53). The level of significance of project impacts under CEQA for Reconfigured Alternative #3 would be the same as for the proposed project, with the same significance rationale, which recognizes a potential for significant construction-related impacts to eligible and assumed-eligible cultural resources.

Mitigation for potential impacts from Reconfigured Alternative #3 would be the same as that recommended for the proposed project: Conditions of Certification **CUL-1** through **CUL-16**, discussed below.

5. Cumulative Impacts and Mitigation

In this section we evaluate the potential for PSPP, and other solar and development projects within the vicinity of PSPP, to have cumulative impacts to cultural resources. Individually minor but collectively significant actions (usually in the form of ground disturbance) may have a cumulatively considerable impact on cultural resources. These impacts may result in a substantially adverse change in the significance of a resource, potentially jeopardizing its eligibility for listing on the NRHP and CRHR.

For the cultural resources cumulative analysis, the regional scope was defined at two levels: local and regional. At the local level, the geographic area considered for cumulative impacts on cultural resources is a loosely defined area on either side of I-10 between Desert Center and Blythe in eastern Riverside County, hereafter referred to as the I-10 Corridor. This corridor overlaps to a large extent with BLM's California Desert Conservation Area. The Corridor does not have strictly defined boundaries, and therefore does not have an area. However, the area is broadly equivalent to a four-mile-wide strip (two miles to either side of I-10) and 48 miles long, between Blythe and Desert Center. The area of this strip is 192 square miles (122,440 acres). (Ex. 301, p. C.3-93.)

Although the total number of cultural resources present in this area is unknown, a rough order of magnitude estimate can be derived based on recent surveys related to three proposed solar power projects (PSPP, Genesis Solar Energy Project, Palen Solar Power Project and Blythe Solar Power Project) which surveyed a total of 19,184 acres. These projects recorded 329 sites, indicating that the Corridor has an average site density of 0.017 cultural resources per acre, and 0.003 potentially eligible resources per acre. This figure suggests that the Corridor originally contained approximately 2,081 cultural resources, 367 of which may have been eligible for the NRHP and the CRHR. The results of Staff's cumulative analysis are shown in **Cultural Resources Table 4**.

CULTURAL RESOURCES TABLE 4
Cumulative Analysis Results:
Estimated Number of Cultural Resources Per Acre

Location	Acres	Number of Known Cultural Resources	Number of Potentially Eligible Cultural Resources
Genesis PAAs Blythe PAAs Palen PAAs	19,184	329 = Average Density of 0.017 sites per acre	58 = Average Density of 0.003 sites per acre
I-10 Corridor	122,440	2,081	367
Southern California Desert Region	11,000,000	187,000	33,000
Existing Projects, I-10 Corridor			
Chuckwalla Valley Prison and Ironwood Prison	1,720	29	5
I-10 Freeway	2,328	40	7
Devers-Palo Verde 1 Transmission Line	350	6	1
Kaiser Eagle Mountain Mine	3,500	59	1
Subtotal	7,898	133	23
Reasonably Foreseeable Future Projects, I-10 Corridor			
13 Solar Projects and Chuckwalla Raceway	47,591	809	143
4 New Transmission Lines	465	17	1
Subtotal	48,056	826	144
Reasonably Foreseeable Future Projects, Southern California Desert Region			
Solar Projects	567,882	9,654	1,704
Wind Projects	433,721	7,373	1,301
Subtotal	1,001,606	17,027	3,005

Source: Ex. 301, p. C.3-94

Construction activities at the PSPP site are expected to result in permanent adverse impacts to cultural resources. PSPP would have a significant direct impact on 34 historically significant archaeological resources, most of which are contributors to one of the two historically significant cultural landscapes identified as present in the PSPP region. (Ex. 301, p. C.3-98.) However, with the proper implementation of Conditions of Certification **CUL-1** through **CUL-17**, the proposed PSPP would result in a less-than-significant impact on known and newly found archaeological resources, including contributors the PTNCL and the DTCCL.

The PSPP construction impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local I-10 Corridor and regional levels. This analysis estimates that more than 800 sites within the I-10 Corridor, and 17,000 sites within the Southern California Desert Region, will potentially be destroyed. Mitigation can reduce the impact of this destruction, but not to a less-than-significant level. (Ex. 301, p. C.3-98.)

To reduce as much as possible the region-wide, significant cumulative impact that Staff has identified from its analysis, we adopt Staff's recommendation that PSPP be required to contribute to the funds established to document and nominate to the NRHP, if appropriate, the PTNCL and the DTCCL (**CUL-1** and **CUL-2**).

Despite the correct implementation of the mitigation measures outlined here, PSPP's incremental contribution to cumulative impacts to cultural resources would nonetheless be cumulatively considerable. To address these immitigable cumulative impacts, we find that overriding considerations justify these impacts and make factual findings in support thereof in the **Override** section of this Decision.

Cumulative impacts associated with Reconfigured Alternative #2 or Reconfigured Alternative #3 would be the same as those discussed for the proposed project.

FINDINGS OF FACT

The Commission makes the following findings and reaches the following conclusions:

1. Without mitigation, the PSPP Project would have a significant direct impact on historically significant archaeological resources.

2. Without mitigation, the PSPP Project has the potential to have a significant indirect impact on contributors to a historically significant cultural landscape.

3. There are resources in the proposed PSPP site footprint and linear facilities corridor that are eligible or assumed eligible for listing in the NRHP and the CRHR.

4. Conditions of Certification **CUL-1 through CUL-16** ensure that all direct and indirect impacts to cultural resources discovered during construction and operation are mitigated below the level of significance.

5. Even with the implementation of Conditions of Certification **CUL-1** and **CUL-2**, PSPP's incremental contribution to cumulative impacts to cultural resources would be cumulatively considerable.

6. Reconfigured Alternative #2 and Reconfigured Alternative #3 would have the same impacts as the proposed project with the addition of 12 more resources each.

7. Overriding considerations warrant acceptance of the project's incremental contributions to cumulative impacts.

CONCLUSIONS OF LAW

1. With implementation of the Conditions of Certification below, the PSPP will conform to all applicable laws, ordinances, regulations, and standards relating to cultural resources as set forth in the pertinent portion of **Appendix A** of this Decision.

2. Through implementation of the Conditions of Certification below, the project will have no significant environmental impacts with the exception of cumulative impacts.

CONDITIONS OF CERTIFICATION

CUL-1 PREHISTORIC TRAILS NETWORK CULTURAL LANDSCAPE (PTNCL) DOCUMENTATION AND NRHP NOMINATION

The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM to finance the completion of the PTNCL Documentation and Possible NRHP Nomination program presented in the Palen Solar Power Project (PSPP) Revised Staff Assessment (RSA).

The amount of the contribution shall be $35 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20 percent of the original contribution. The contribution to the special fund may be made in installments at the approval of the CPM, with the first installment to constitute one-third of the total original contribution amount.

If a project is not certified, or if a project owner does not build the project, or, if for some other reason deemed acceptable by the CPM, a project owner does not participate in funding the PTNCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the PTNCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the PTNCL documentation and possible NRHP nomination program, then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification: No later than 10 days after receiving notice of the successful transfer of funds for any installment to the Energy Commission‘s and/or BLM‘s special PTNCL fund, the project owner shall submit a copy of the notice to the Energy Commission‘s Compliance Project Manager (CPM).

CUL-2 DESERT TRAINING CENTER CALIFORNIA-ARIZONA MANEUVER AREA CULTURAL LANDSCAPE (DTCCL) DOCUMENTATION AND POSSIBLE NRHP NOMINATION

The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM to finance the completion of the Documentation and Possible NRHP Nomination program presented in the PSPP RSA.

The amount of the contribution shall be $25 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20 percent of the original contribution. The contribution to the special fund may be made in installments at the approval of the CPM, with the first installment to constitute one-third of the total original contribution amount.

If a project is not certified, or if a project owner does not build the project, or, if for some other reason deemed acceptable by the CPM, a project owner does not participate in funding the DTCCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the DTCCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the DTCCL documentation and possible NRHP nomination program, then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification: No later than 10 days after receiving notice of the successful transfer of funds for any installment to the Energy Commission's and/or BLM's special DTCCL fund, the project owner shall submit a copy of the notice to the CPM.

CUL-3 CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance (includes "preconstruction site mobilization," "construction-related ground disturbance," and "construction-related grading, boring, and trenching," as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities in accordance with the Conditions of Certification (Conditions).

The CRS shall have a primarily administrative and coordination role for the PSPP. The CRS may obtain the services of Cultural Resources Monitors (CRMs), if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS implements the **Cultural Resources** Conditions providing for data recovery from known historical resources and ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for reasons including but not limited to noncompliance on this or other Energy Commission projects.

Cultural Resources Specialist

The resumés for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as

published in Title 36, Code of Federal Regulations, part 61. In addition, the CRS shall have the following qualifications:

1 A background in anthropology and prehistoric archaeology;

2 At least 10 years of archaeological resource mitigation and field experience, with at least three of those years in California; and

3 At least three years of experience in a decision-making capacity on cultural resources projects, with at least one of those years in California, and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

Required Cultural Resources Technical Specialists

The project owner shall ensure that the CRS obtains the services of a qualified prehistoric archaeologist to conduct the research specified in **CUL-11** and **CUL-12**. The Project Prehistoric Archaeologist's (PPA) training and background must meet the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and the résumé of the PPA must demonstrate familiarity with similar artifacts and environmental modifications (deliberate and incidental) to those associated with the prehistoric and protohistoric use of the Chuckwalla Valley. The PPA must meet OSHA standards as a "Competent Person" in trench safety.

The project owner shall ensure that the CRS obtains the services of a qualified historical archaeologist to conduct the research specified in **CUL-13** and **CUL-14**. The Project Historical Archaeologist's (PHA) training and background must meet the U.S. Secretary of Interior's Professional Qualifications Standards for historical archaeology, as published in Title 36, Code of Federal Regulations, part 61.

The résumés of the CRS, alternate CRS, the PPA, and the PHA shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the résumés and demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research. The project owner may name and hire the CRS, alternate CRS, the PPA, and the PHA prior to certification.

Field Crew Members and Cultural Resources Monitors

CRMs and field crew members shall have the following qualifications:

1. A B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or

2. An A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or

3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of monitoring experience in California.

Verification:

1. Preferably at least 120 days, but in any event no less than 75 days prior to the start of ground disturbance, the project owner shall submit the résumés for the CRS, the alternate CRS(s) if desired, the PPA, and the PHA to the CPM for review and approval.

2. At least 65 days prior to the start of data recovery on known archaeological sites, the project owner shall confirm in writing to the CPM that the approved CRS, the PPA, and the PHA will be available for on-site work and are prepared to implement the **Cultural Resources** Conditions **CUL-11** through **CUL-15**.

3. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the résumé of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If no alternate CRS is available to assume the duties of the CRS, a monitor may serve in place of a CRS so that ground disturbance may continue up to a maximum of three days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

4. At least 20 days prior to data recovery on known archaeological sites, the CRS shall provide a letter naming anticipated field crew members for the project and attesting that the identified field crew members meet the minimum qualifications for cultural resources data recovery required by this Condition.

5. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and attesting that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

6. At least five days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide letters to the CPM identifying the new CRMs and attesting to their qualifications.

CUL-4 PROJECT DOCUMENTATION FOR CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance, the project owner shall provide the CRS, the PPA, and the PHA with copies of the AFC, data responses, confidential cultural resources documents, the Revised

Staff Assessment (RSA), RSA Errata, and the Commission Decision for the project. The project owner shall also provide the CRS, the PPA, the PHA, and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and maps at an appropriate scale (e.g., 1:2400 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS, the PPA, the PHA, and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification:

1. Preferably at least 115 days, but in any event no less than 60 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), RSA Errata, and the Commission Decision for the project to the CRS, if needed, and to the PPA, and the PHA. The project owner shall also provide the subject maps and drawings to the CRS, PPA, PHA, and CPM. Staff, in consultation with the CRS, PPA, and PHA, will review and approve maps and drawings suitable for cultural resources monitoring and data recovery activities.

2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS, PPA, PHA, and CPM.

3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS, PPA, PHA, and CPM.

4. Weekly, during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

5. Within five days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-5 CULTURAL RESOURCES MONITORING AND MITIGATION PLAN

Prior to the start of ground disturbance, the project owner shall submit to the CPM for review and approval the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, with the contributions of the PPA, and the PHA. The authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall specify the impact mitigation protocols for all known cultural resources and identify general and specific measures to minimize potential impacts to all other cultural resources, including those discovered during construction. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, the PPA, and the PHA, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM. Prior to certification, the project owner may have the CRS, alternate CRS, the PPA, and the PHA complete and submit to CEC for review the CRMMP, except for the portions to be contributed by the PTNCL and the DTCCL programs.

The CRMMP shall include, but not be limited to, the elements and measures listed below.

1. The following statement shall be included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The Conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The **Cultural Resources** Conditions of Certification from the Commission Decision are contained in **Appendix A**."
2. The duties of the CRS shall be fully discussed, including coordination duties with respect to the completion of the Prehistoric Trails Network Cultural Landscape (PTNCL) documentation and possible NRHP nomination program and the Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) documentation and possible NRHP nomination program, and oversight/management duties with respect to site evaluation, data collection, monitoring, and reporting at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as

determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction.

3. A general research design shall be developed that:
   a. Charts a timeline of all research activities, including those coordinated under the PTNCL and DTCCL documentation and possible NRHP nomination programs;
   b. Recapitulates the existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts developed in the PTNCL and DTCCL historic context and adds to these the additional context of the non-military, historic-period occupation and use of the Chuckwalla Valley, to create a comprehensive historic context for the PSPP vicinity;
   c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological resource types known for the Chuckwalla Valley, based on the research questions developed under the PTNCL and DTCCL research and on the archaeological and historical literature pertinent to the Chuckwalla Valley; and
   d. Clearly articulates why it is in the public interest to address the research questions that it poses.
4. Protocols, reflecting the guidance provided in **CUL-10** through **CUL-15** shall be specified for the treatment of known and newly discovered prehistoric and historic-period archaeological resource types.
5. Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to cultural resources materials and documentation resulting from evaluation and data recovery at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction. A prescriptive treatment plan may be included in the CRMMP for limited data types.
6. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project shall be specified.
7. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.

8. The manner in which Native American observers or monitors will be included, in addition to their roles in the activities required under **CUL-1**, the procedures to be used to select them, and their roles and responsibilities shall be described.

9. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.

10. The commitment to record on Department of Parks and Recreation (DPR) 523 forms, to map, and to photograph all encountered cultural resources over 50 years of age shall be stated. In addition, the commitment to curate all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with the California State Historical Resources Commission‘s Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum shall be stated.

11. The commitment of the project owner to pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project shall be stated. The project owner shall identify a curation facility that could accept cultural resources materials resulting from PSPP cultural resources investigations.

12. The CRS shall attest to having access to equipment and supplies necessary for site mapping, photography, and recovery of all cultural resource materials (that cannot be treated prescriptively) from known CRHR-eligible archaeological sites and from CRHR-eligible sites that are encountered during ground disturbance .

13. The contents, format, and review and approval process of the final Cultural Resource Report (CRR) shall be described.

Verification:

1. Preferably at least 45 days, but in any event no less than 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.

2. At least 20 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery).

3. At least 30 days prior to the start of ground disturbance, the project owner

shall provide to the CPM a copy of a letter from a curation facility that meets the standards stated in the California State Historical Resources Commission‘s Guidelines for the Curation of Archaeological Collections, stating the facility‘s willingness and ability to receive the materials generated by PSPP cultural resources activities and requiring curation. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-6 CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for review and approval and to the BLM Palm Springs archaeologist for review and comment. The final CRR shall be written by or under the direction of the CRS. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, revised and final Department of Parks and Recreation (DPR) 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM and to the BLM Palm Springs archaeologist for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

2. Within 180 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval and to the BLM Palm Springs archaeologist for review and comment. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

3. Within 10 days after the CPM and the BLM Palm Springs archaeologist approve the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

CUL-7 WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.
10. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval.

2. At least 15 days prior to the start of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP trained worker to sign.

3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-8 CONSTRUCTION MONITORING PROGRAM

The project owner shall ensure that the CRS, alternate CRS, or CRMs, to prevent construction impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner, monitor full time all ground disturbance.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of the earth-removing activities in the areas specified in the previous paragraph, for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than 50 feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring. The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.

2. Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.

3. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

4. Daily, as long as no cultural resources are found, the CRS shall provide a statement that “no cultural resources over 50 years of age were discovered” to the CPM as an e-mail or in some other form of communication acceptable to the CPM.

5. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS‘s justification for reducing or ending daily reporting.

6. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

7. Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner‘s transmittals of information.

CUL-9 AUTHORITY TO HALT CONSTRUCTION; TREATMENT OF DISCOVERIES

The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, PPA, PHA, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting, as provided in other Conditions, shall continue during the project‘s ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523 “Primary” form. Unless the find can be treated prescriptively, as specified in the CRMMP, the “Description” entry of the DPR 523 “Primary” form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS‘s proposed data recovery plan, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, PPA, PHA, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-10 FLAG AND AVOID

If resources within the transmission line corridor can be spanned rather than impacted, or in the event that new resources are discovered during construction where impacts can be reduced or avoided, the project owner shall:

1. Ensure that a CRS, alternate CRS, PPA, or CRM re-establish the boundary of each site, add a 10-meter-wide buffer around the periphery of each site boundary, and flag the resulting space in a conspicuous manner;

2. Ensure that a CRM enforces avoidance of the flagged areas during PSPP construction; and
3. Ensure, after completion of construction, boundary markings around each site and buffer are removed so as not to attract vandals.

Verification: Within 90 days of the completion of Project construction, the project owner shall submit for CPM review and approval a letter, with photograph and maps, evidencing the removal of boundary markings.

CUL-11 DATA RECOVERY FOR SIMPLE PREHISTORIC SITES

(Sparse Lithic Scatters, Cairns, and Pot Drops)

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "simple prehistoric sites," consisting of sites SMP-P-1015, SMP-P-1016, SMP-P-2014, SMP-P-2015, and SMP-P-001. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include the use of the CARIDAP protocol on sites that qualify, how to proceed if features or other buried deposits are encountered, and the materials analyses and laboratory artifact analyses that will be used.

The plan shall also specify in detail the location recordation equipment and methods used and describe any post-processing of the data. If allowed by the BLM, prior to the start of ground disturbance within 30 meters of the site boundaries of each of these sites, the project owner shall ensure that the CRS, the PPA, and/or archaeological team members implement the plan, which, for sites where CARIDAP does not apply, shall include, but is not limited to the following tasks:

1. Use location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations;
2. Request the PTNCL PG, or equivalent qualified person approved by the CPM and hired by the project owner should the PTNCL geoarchaeologist not be available, to identify the specific landform for each site and its relationship to specific ancient lakeshores of Palen Dry Lake; if a lakeshore is present within 100 meters of the site boundary, include it on the site map;
3. Map and field-record all lithic artifacts (numbers of flakes, the reduction sequence stage each represents, cores, tool blanks, finished tools, hammerstones, and concentrations, and the material types of each) and the other types of prehistoric artifacts present.

4. Map any differential distribution of artifacts and suggest explanations for the distribution
5. Assess the integrity of the site and provide the evidence substantiating that assessment;
6. Collect for dating and source analyses any obsidian artifacts;
7. Field record the surface location of all other artifacts and collect all ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
8. Surface scrape to a depth of 5 centimeters a 5-meter-by-5-meter area centered on the artifact concentration, field-record the lithic artifacts as to location, material type, and the reduction sequence stage each represents, record the location of all other artifacts, and retain the obsidian and ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
9. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, placing the unit in the part of the site with the highest artifact density and recording its locations on the site map;
10. Place one 1-meter-by-1-meter excavation unit, as described above, in the center of each concentration if multiple artifact concentrations have been identified;
11. Notify the CPM by telephone or e-mail that subsurface deposits were or were not encountered and make a recommendation on the site‘s CRHR eligibility;
12. If no subsurface deposits were encountered, and the CPM agrees the site is not eligible for the CRHR, data recovery is complete;
13. If subsurface deposits are encountered, test the horizontal limits of the site by excavating additional 1-meter-by-1-meter excavation units in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, using a shovel or hand auger, or other similar technique, at four spots equally spread around the exterior edge of each site, recording the locations of these units on the site map;
14. Sample the encountered features or deposits, using the methods described in the CRMMP, record their locations on the site map, retain samples, such as flotation, pollen, and charcoal, for analysis, and retain all artifacts for professionally appropriate laboratory analyses and curation, until data recovery is complete;
15. Present the results of the **CUL-11** data recovery in a letter report by the PPA or CRS, which shall serve as a preliminary report. Letter reports may address one site, or multiple sites depending on the

needs of the CRS. The letter report shall be a concise document the provides description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, a map showing the location of excavation units including topographic contours and the site landforms, and a discussion of the CRHR eligibility of each site and the justification for that determination;

16. Update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including new data on seasonal drainages, site boundaries, location of each individual artifact, the boundaries around individual artifact concentrations, the landform, and the eligibility determination;

17. Provide the recovered data to the PTNCL PI-Prehistoric Archaeologist; and

18. Present the final results of data recovery at these prehistoric sites in the CRR, as described in **CUL-6**.

Verification:

1. At least 45 days prior to ground disturbance, the project owner shall notify the CPM that data recovery for small sites has ensued.

2. After the completion of the excavation of the first 1-meter-by-1-meter excavation unit at each of the subject sites, the CRS shall notify the CPM regarding the presence or absence of subsurface deposits and shall make a recommendation on the site‘s CRHR eligibility.

3. Within one week of the completion of data recovery at a site, the project owner shall submit a letter report written by the PPA or CRS for review and approval of the CPM. When the CPM approves the letter report, ground disturbance may begin at this site location.

CUL-12 DATA RECOVERY FOR COMPLEX PREHISTORIC SITES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type “complex prehistoric sites,” consisting of SMP-P-1017, SMP-P-1018, SMP-P-2018, and SMP-P-2023. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if buried deposits are encountered and shall also include the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods used and describe any post-processing of the data. If allowed by the BLM, prior to the start of ground disturbance within 30 meters of the site boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, which shall include, but is not limited to, the following tasks:

1. Use location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations;
2. Request the PTNCL PG, or equivalent qualified person approved by the CPM and hired by the project owner should the PG not be available, to identify the specific landform for each site and its relationship to specific ancient lakeshores of Palen Dry Lake. If a lakeshore is present within 100 meters of the site boundary, include it on the site map;
3. Map any differential distribution of artifacts and suggest an explanation for this distribution;
4. Assess the integrity of the site and state the evidence substantiating that opinion;
5. Collect all artifacts after their locations are marked and submit them for laboratory analysis;
6. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until three sterile levels are encountered, or until the unit reaches maximum depth of planned impact, placing this unit in the part of the site with the highest artifact density; or, if multiple artifact concentrations were identified, place one 1-meter-by-1-meter excavation unit in the center of each concentration and excavate as just described; retain any artifacts for laboratory analysis;
7. Determine the vertical and horizontal limits of the each site by placing test units at four locations equally spread around the surface exterior edge and excavating or probing down to the Holocene basement, using a shovel, hand auger, or similar technique; continue exploration in all directions until the horizontal limits of the site are reached; retain any artifacts for laboratory analysis;
8. Excavate the surface feature or features, using the methods described in the CRMMP; record their locations on the site map, retain samples, such as flotation, pollen, and charcoal, for analysis, and retain all artifacts for professionally appropriate laboratory analyses and curation, until data recovery is complete;
9. Notify the CPM by telephone or e-mail that subsurface deposits were or were not encountered and make a recommendation on the site‘s CRHR eligibility;
10. If no subsurface deposits were encountered, and the CPM agrees the site is not eligible for the CRHR, data recovery is complete;

11. If subsurface deposits were found, develop a sampling design for additional data recovery in consultation with the CRS; plans for this contingency shall be described in detail in the CRMMP;

12. Present the results of the **CUL-12** data recovery in a letter report by the PPA or CRS that shall serve as a preliminary report. Letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report shall be a concise document that provides description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of excavation units including topographic contours and the site landforms;

13. Update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including new data on seasonal drainages, site boundaries, location of each individual artifact, the boundaries around individual artifact concentrations, and the landform;

14. Provide the recovered data to the PTNCL PI-Prehistoric Archaeologist; and

15. Present the final results of data recovery for the complex prehistoric sites in the CRR, as described in **CUL-6**.

Verification:

1. At least 45 days prior to ground disturbance, the project owner shall notify the CPM that data recovery for large complex sites has ensued.

2. Within one week of the completion of data recovery at a site, the project owner shall verify this by submitting a letter report written by the PPA or CRS for review and approval of the CPM. When the CPM approves the letter report, ground disturbance may begin at these site locations.

CUL-13 DATA RECOVERY FOR HISTORIC-PERIOD REFUSE SCATTERS

Prior to the start of ground disturbance, the project owner shall ensure that a recovery plan is included in the CRMMP for upgrading the recordation of historic-period refuse scatter sites located on the proposed plant site. For Reconfigured Alternative # 3, these consist of sites SMP-H-1003, SMP-H-1004, SMP-H-1006, SMP-H-1008, SMP-H-1009, SMP-H-1010, SMP-H-1011, SMP-H-1012, SMP-H-1013, SMP-H-1020, SMP-H-1021, SMP-H-1022, SMP-H-1023, SMP-H-2002, SMP-H-2003, SMP-H-2004, SMP-H-2006, SMP-H-2007, SMP-H-2008, SMP-H-2010, SMP-H-2011/12, SMP-H-2017, SMP-H-2019, SMP-H-2021; JR-101, JR-102, JR-104, JR-109, JR-110; TC-008, TC-009, TC-020, and TC-032. For Reconfigured Alternative #2, the sites requiring upgraded recordation consist of the same sites as

Reconfigured Alternative #3 plus site JR-107. These site lists may be revised only with the agreement of the CRS and the CPM.

The focus of the recordation upgrade is to determine if these sites can be attributed to the DTC/C-AMA use of the region and are therefore contributors to the DTCCL. The plan shall specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. The project owner shall then ensure that the CRS, the PHA, and/or archaeological team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.
2. The project owner shall ensure that, prior to beginning the field work, the PHA and crew chief are trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, to identify the specific landform for each site; in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. army activities, as researched and detailed by the DTCCL PI-Historian and the DTCCL Historical Archaeologist.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are also trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.
4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features, using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).
5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, documenting the measurements and the types of seams and closures for each bottle, and the measurements, seams, closure, and opening method for all cans. Photographs shall be taken of maker‘s marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker‘s marks on ceramics. Artifacts shall not be collected.
6. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or PHA, which shall serve as a preliminary report, that details what was found at each site, as follows:

a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and

b. The letter report shall be a concise document that provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.

c. The letter report shall make a recommendation on whether each site is a contributor to the DTTCL.

7. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the historic-period sites are contributing elements to the DTCCL.

8. The project owner shall ensure that the PHA analyzes all recovered data and writes, or supervisors the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-6**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification:

1. At least 45 days prior to ground disturbance, the project owner shall notify the CPM that mapping and upgraded in-field artifact analysis has ensued on the historic-period refuse scatter sites.

2. Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-14 DATA RECOVERY FOR HISTORIC-PERIOD SITES WITH FEATURES

Prior to the start of ground disturbance, the project owner shall ensure that a data recovery plan is included in the CRMMP for evaluation and data recovery from historic-period archaeological sites with features. For Reconfigured Alternative #3, these sites consist of sites SMP-H-1005, SMP-H-1007, SMP-H-2016. For Reconfigured Alternative #2, these sites consist of the same sites as Reconfigured Alternative #3, plus site JR-108. These site lists may be revised only with the agreement of the CRS and the CPM. The plan shall specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. The project owner shall then ensure that the CRS, the PHA, and/or archaeological

team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.
2. The project owner shall ensure that, prior to beginning the field work, the PHA and crew chief are trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. army activities, as researched and detailed by the DTCCL PI-Historian and the DTCCL Historical Archaeologist.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are also trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.
4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).
5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, if not done previously. Types of seams and closures for each bottle and all cans shall be documented. Photographs shall be taken of any text or designs. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.
6. The project owner shall ensure a systematic metal detector survey be completed at each site, and that each “hit” is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.
7. The project owner shall ensure that all features are recorded, and that any features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.
8. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or PHA

which shall serve as a preliminary report, that details what was found at each site, as follows:

a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and

b. The letter report shall be a concise document that provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.

c. The letter report shall make a recommendation on whether each site is a contributor to the DTCCL.

9. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the historic-period sites are contributing elements to the DTCCL.

10. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR **(CUL-6**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification:

1. At least 45 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period sites with features.

2. Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-15 DATA RECOVERY ON HISTORIC-PERIOD ROADS

The project owner shall ensure that a qualified architectural historian (must meet the U.S. Secretary of the Interior‘s Professional Qualifications Standards for historian, as published in Title 36, Code of Federal Regulations, part 61) conducts research and writes a report on the age and use of SMP-H-1032.

The project owner shall provide the historian‘s report to the DTCCL PI-Historian for possible use in the DTCCL NRHP nomination, if appropriate.

The project owner may undertake this task prior to Energy Commission certification of the project.

Verification:

1. At least 15 days prior to ground disturbance, the project owner shall submit to the CPM the historian‘s report documenting the age and historical use of the road.

2. Within 15 days after the CPM approves the report, the project owner shall forward it to the DTCCL PI-Historian.

CUL-16 COMPLIANCE WITH BLM PROGRAMMATIC AGREEMENT

If provisions in the BLM PSPP Programmatic Agreement and associated implementation and monitoring programs conflict with or duplicate these Conditions of Certification, the BLM provisions shall take precedence. Provisions in these Conditions that are additional to or exceed BLM provisions and represent requirements under the Energy Commission‘s CEQA responsibilities shall continue to apply to the project‘s activities, contingent on BLM‘s approval as authorized by federal law.

D. GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

This section of the Decision summarizes the record of the project's potential effects relating to geological and paleontological resources. Our evaluation in this subject area is guided by California Environmental Quality Act (CEQA) Guidelines, Appendix G. The evidence evaluates whether project-related activities could result in exposure to geological hazards, as well as whether the facility can be designed and constructed to avoid any such hazard which could impair its proper functioning. These include faulting and seismicity, liquefaction, lateral spreading, dynamic compaction, hydrocompaction, subsidence, expansive and corrosive soils, landslides, flooding, volcanic hazards, tsunamis, and seiches. Next, the evidence assesses whether the project will impact any geologic or mineralogical resources. Finally, the analysis of record examines whether fossilized remains or trace remnants of prehistoric plants or animals are likely to be present at the site and, if so, whether the project's potential impacts to these resources are adequately mitigated. (Exs. 1, § 5.5; 300, pp. D.2-1 - D.2-39.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Site Description

The Palen Solar project site is located entirely on undisturbed federal land administered by the BLM. The project would be built on a grant for approximately 5,200 acres currently administered by the BLM. The proposed PSPP facility would be constructed on approximately 4,000 acres within the 5,200 acre Right of Way (ROW). The site has been described as being located in the southeastern portion of the Mojave Desert geomorphic province or, alternatively, as located in the northeastern quarter of the Colorado Desert geomorphic province, of the Mojave Desert of Southern California near the Arizona border. The region is more characteristic of the Mojave Desert geomorphic province in terms of geology, structure and physiography. (Ex. 300, p. D.2-5.) The proposed site is situated on the alluvial-filled plain within the northwest-trending Chuckwalla Valley between the Chuckwalla Mountains to the southwest, and the Palen Mountains to the northeast. Overall the proposed site slopes at very shallow grades north and northeast toward the local topographic low at Palen Dry Lake basin of the Palo Verde Mesa just east of the McCoy Mountains. (*Id*.)

A preliminary geotechnical investigation including 13 exploratory borings and eight test pits has been completed for the general area of the Palen Solar site.

The investigation reveals that the site is underlain by younger and older alluvium that generally consists of sand and gravel to the maximum depth of exploration (approximately 76.5 feet below the existing ground surface). The site is generally surfaced with unconsolidated soils due to desiccation and/or wind deposition to a maximum depth of 2 feet below the existing grade. The soils below the surface materials are generally dense to very dense poorly graded sand, silty sand and clayey sand to poorly graded gravel with sand. Very stiff to hard fine grain soils and sandy clays are locally present as interbedded layers of 1 to 3 feet thickness at depths generally greater than 15 feet below existing grade. The near surface site soils are primarily granular with little to no swell potential. Collapse potential tests indicate the site soils exhibit a collapse potential in the range of 0 to 3.6 percent when inundated with water. (Ex. 300, p. D.2-7.)

The proposed Palen Solar site is not crossed by any known active faults or designated Alquist-Priolo Earthquake Fault Zones (EFZs). However, a number of major, active faults lie within 62 miles of the site.[1]

The ground water depth on the project site is not precisely known and is expected to vary with the site topographic elevation. Recent exploration indicates that ground water exists between 68 and 73 feet of the existing grade. (*Id.*)

2. Impacts and Mitigation

In this part of the Decision we consider two types of impacts. The first is geologic hazards, which could impact the proper functioning of the proposed facility and create life/safety concerns. The second is the potential impacts the proposed facility could have on existing geologic, mineralogic, and paleontologic resources in the area.

Ground shaking, hydro-compaction, dynamic compaction, and corrosive soils represent the main geologic hazards at the proposed site. The record establishes that these potential hazards will be effectively mitigated through facility design by incorporating recommendations contained in the project geotechnical evaluation as required by Condition of Certification **GEO-1**. Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section of this Decision should also mitigate these impacts to a less than significant level. The project site is currently not used for mineral production, nor is it under claim, lease, or permit for the production of minerals. Sand and gravel resources are present at the site;

[1] These faults are summarized in the Revised Staff Assessment, Exhibit 300 at page D.2-1, Table 3.

however, such materials are also present throughout the regional area, so the Palen Solar project should not have a significant impact on the availability of these resources. (Ex. 300, p. D.2-8.) Only limited exploration for oil and gas resources has been performed in the area, and no active oil or gas operations are located in the immediate vicinity of the project. As a result, the PSPP would not impact any current or reasonably foreseeable development of geologic or mineral resources. (*Id*.)

The evidence establishes a high probability that paleontologic resources will be encountered during grading and excavation in the older Quaternary age alluvial and lacustrine sediments. Further, deeper excavations in the younger alluvium that will encounter the underlying older Quaternary age alluvial soils will also have a high probability to encounter paleontologic resources. Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate potential impacts to paleontologic resources to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (paleontologic resource specialist [PRS]).

a. Geologic Hazards

Analysis in the AFC as well as Staff's independent review indicate that the possibility of geologic hazards significantly affecting the operation of the plant site during its practical design life is low. However, geologic hazards must be further addressed in a design-level project geotechnical report per California Building Code (CBC-2007) requirements and Condition of Certification **GEO-1**. No significant faults were identified within 63 miles of the project site. The closest surface rupture is in the Brawley Seismic Zone approximately 37 miles southwest of PSPP site. The potential for surface rupture on a fault at the solar power plant site and along its offsite linear facilities is considered to be very low. However, there are seventeen historic earthquakes of Magnitude 6.4 or greater that have occurred between 37 and 62.1 miles of the site. (Ex. 300, p. D.2-10, Table 3.)

The close proximity of the proposed PSPP site to the Mojave-Sonoran belt and relatively great distance from more seismically active areas to the west and northwest would suggest a relatively low to moderate probability of intense ground shaking in the project area. However, events such as the Landers earthquake (7.6 Mw), which occurred on June 28, 1992 near Yucca Valley in San Bernardino County, approximately 78 miles from the proposed site, demonstrate

that the site could be subject to moderate levels of earthquake-related ground shaking in the future. (Ex. 300, p. D.2-11.)

Analysis by Applicant and separately by Staff evaluated the potential for the project to be significantly affected by liquefaction, lateral spreading, dynamic compaction, hydrocompaction, subsidence, expansive soils, corrosive soils, landslides, flooding, tsunamis, and volcanic hazards. However, none of these presents a significant risk to the Palen Solar project. (Ex. 300, p. D.2-9 - D.2-14.)

b. Geologic, Mineralogic, and Paleontologic Resources

The evidence also contains an examination of geologic and mineralogic resources which could potentially be impacted by the project. Construction of the proposed project will include grading, foundation excavation, utility trenching and possibly drilled shafts. The proposed project site is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. Sand and gravel resources are present at the site and could potentially be a source of salable resources; however, such materials are present throughout the regional area such that the PSPP should not have a significant impact on the availability of such resources. The nearest oil and gas fields are located more than 150 miles west of PSPP site in the Los Angeles Sedimentary basin. The nearest geothermal field is located at Brawley just south of the Salton Sea in the Imperial Valley basin about 40 miles southwest of PSPP site. (Ex. 300, p. D.2-16.)

The evidentiary record includes expert review of paleontologic resources assessments contained in the AFC as well as other sources for information regarding known fossil localities and stratigraphic unit sensitivity within the proposed project area. The evidence establishes that no recorded fossil collection sites exist within the proposed project boundaries or within a one-mile radius. However, three vertebrate fossil collection areas have been documented in the proposed project area within the same or similar sedimentary units which underlie the site. One location east-southeast of the site between I-10 and Ford Dry Lake contained fossil remains of a pocket mouse. Another site northwest of the proposed project site in the northern Chuckwalla Valley yielded fossil remains of tortoise, horse, camel, and llama. (Ex. 300, p. D.2-16.)

Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate any paleontologic resource impacts to a less than significant level. Essentially,

Conditions of Certification **PAL-1** to **PAL-7** would require a worker education program in conjunction with monitoring of earthwork activities by qualified, professional paleontological resource specialists (PRS). Earthwork would be halted any time potential fossils are recognized by either the paleontologist or the worker. For finds deemed significant by the PRS, earthwork cannot restart until all fossils in that strata, including those below the design depth of excavation, are collected.

In contrast to construction of the project, operation of the proposed new solar energy generating facility is not likely to have any adverse impact on geologic, mineralogic, or paleontologic resources.

The evidentiary record also contains analyses of numerous project alternatives including several reconfigured design alternatives, a reduced acreage alternative, and three variations on the No Project/No Action alternative. (See Ex. 300, pp. D.2-19 - D.2-25.) None of the other alternatives proved superior in both reducing impacts and meeting project objectives. However, in the case of the reduced acreage alternative, impacts would be reduced proportionally to the reduction in the project size. Most of the No Project alternatives would likely lead to similar impacts as those of the proposed project. This is due to likely development of other solar projects on the site. However, No Action Alternative case number three presumes that the proposed site would not be available for future solar development and would remain natural. This could result in an increased reliance on fossil fuel-fired generation. Nevertheless, in the absence of the Palen Solar project, other renewable energy projects at different locations may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations. (Ex. 300, p. D.2-25.)

In order to transmit power from the Palen Solar project to the electricity grid, a new substation is required. The proposed Southern California Edison (SCE) Red Bluff Substation is a reasonably foreseeable project if the PSPP is approved and constructed as proposed. It will be under the permitting jurisdictions of the BLM and the California Public Utilities Commission (CPUC). This substation would allow interconnection of the PSPP and other renewable energy projects in the Desert Center area. The substation would involve the construction and operational impacts of a 230/500-kV substation that would be located on approximately 90 acres, south of Interstate 10 and southeast of Desert Center. Substation components will include 230-kV and 500-kV lines, 230/500-kV transformer banks, associated switch racks, and a microwave tower. The

substation would be located in an existing CDCA utility corridor, north of and adjacent to the existing DPV1 500-kV transmission line.

SCE would comply with applicable construction and operational LORS as related to the Red Bluff Substation project. No significant geologic or mineral resources have been identified in the project area; however, technical investigations/surveys have not yet been performed. The upgraded lines and substation equipment would be designed and constructed in accordance with the seismic requirements of SCE's Construction Standards and CPUC General Order 95.

Mitigation should provide for a paleontologic resources inventory after final project design, pre-construction planning for monitoring and treatment of paleontologic resources, and for monitoring during construction. The mitigation should require a qualified paleontologic monitor and qualified paleontologist to monitor for significant subsurface fossils and then collect, analyze, and curate any significant fossils found.

Since detailed design information is not yet available for the Red Bluff Substation, the analysis presented in the evidentiary record was based on information available at the time of the hearing. The SCE Red Bluff Substation project will be more fully evaluated per the National Environmental Policy Act (NEPA) in a future Environmental Impact Statement (EIS) prepared by the BLM, with a California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) review to be conducted by the CPUC. (Ex. 300, p. D.2-27.)

3. Cumulative Impacts

The evidentiary record includes an analysis of potential cumulative impacts of the Palen Solar project with other projects. (Ex. 300, pp. D.2-28 - D.2-30.) These projects are defined within a geographic area that has been identified by the Energy Commission and 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 CEQA and/or NEPA. Potential cumulative effects, as they pertain to geologic hazards, are essentially limited to regional subsidence due to ground water withdrawal. Impacts associated with strong ground shaking and dynamic compaction are not cumulative in nature and would not add to potential cumulative impacts to the facility.

One cumulative impact is likely to be increased groundwater pumping. The proposed Palen Solar project would result in increased annual ground water pumping, from the current 2,000 ac-ft/yr to approximately 2,300 ac-ft/yr. (Ex. 300, p. D.2-28.) Other projects considered in the cumulative impacts analysis would most likely include ground water pumping of similar magnitude to Palen Solar. However, the combined effect of these projects would still result in much less than the historic rate of 48,000 ac-ft/yr, a rate which did not result in any documented regional subsidence. Therefore, there would be no significant cumulative contribution to regional subsidence from foreseeable renewable projects in the Chuckwalla Valley. In addition, the analysis revealed that the potential for significant adverse cumulative impacts to the proposed project from geologic hazards during the project's design life is negligible and that the potential for impacts to geologic, mineralogic, and paleontologic resources is very low.

Based on the evidence, we find that the potential for significant adverse cumulative impacts to the proposed project from geologic hazards during the project's design life is negligible and that the potential for impacts to geologic, mineralogic, and paleontologic resources is very low. (Ex. 300, p. D.2-28.)

FINDINGS OF FACT

Based on the evidence, we make the following findings:

1. The proposed Palen Solar Power Project (Palen Solar) site is located in a moderately active geologic area of the eastern Mojave Desert geomorphic province in eastern Riverside County, California.

2. The main geologic hazards at this site include strong ground shaking, hydro-compaction, dynamic compaction, and corrosive soils.

3. These potential hazards can be effectively mitigated through facility design by incorporating recommendations contained in a design-level geotechnical report as required by the California Building Code (CBC 2007) and Condition of Certification **GEO-1**, as well as Conditions of Certification found in the **Facility Design** section of this Decision.

4. The proposed project area is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals.

5. Sand and gravel resources are not only present at the site but are also available throughout the regional area with the result the Palen Solar project should not have a significant impact on the availability of such resources. There are no other known geological or mineralogical resources at the PSPP site.

6. Paleontologic resources have been documented in older Quaternary alluvium similar to that located on the project site.

7. Potential impacts to paleontologic resources would be mitigated through worker training and monitoring by qualified paleontologists, as required by Conditions of Certification, **PAL-1** through **PAL-7**.

8. The potential for intense levels of earthquake-related ground shaking and settlement due to earthquake are geologic hazards which could affect the Palen Solar Project.

9. The evidentiary record contains a geotechnical evaluation and presents standard engineering design recommendations for mitigation of seismic shaking and site soil conditions applicable to the project site.

10. Potential geologic hazards to the project are effectively mitigated by standard engineering design measures as specified in Conditions **GEN-1, GEN-5,** and **CIVIL-1** of the **Facility Design** section of this Decision.

11. The evidence establishes that there is a low potential for significant adverse impacts to the proposed project from geologic hazards during its design life.

12. The evidence establishes that there is a low potential for significant adverse impacts to geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project.

13. Liquefaction, lateral spreading, dynamic compaction, hydrocompaction, subsidence, expansive soils, corrosive soils, landslides, flooding, tsunamis, seiches, and volcanic hazards pose low or negligible risks to the project.

14. The proposed Palen Solar project site is located within an established Mineral Resource Zone (MRZ) 4 and no economically viable mineral deposits are known to be present at the site

15. There is no evidence of known active faults or potential geological or mineralogical resources at the project site or along the linear alignments.

16. Project construction-related mass grading, deep foundation excavation, and utility trenching that penetrates underlying undisturbed soils holds a high potential for exposure of paleontological resources, until determined otherwise by the project paleontological resource specialist.

17. The project owner will implement several mitigation measures to avoid impacts to any paleontological resources discovered, including worker education, preparing a Paleontological Monitoring and Mitigation Plan, and having a Paleontologic Resource Specialist on-site. These mitigation measures are found in Conditions of Certification **PAL-1** through **PAL-7,** below.

18. In order to transmit power from the PSPP to the integrated grid, construction of the SCE Red Bluff Substation is a reasonably foreseeable project if the PSPP is approved and constructed as proposed.

19. Detailed design information is not yet available for the Red Bluff Substation, but the substation project will be fully evaluated in a future EIS prepared by the BLM, and an EIR prepared by the CPUC.

20. The Red Bluff Substation will be designed and constructed in accordance with the seismic requirements of SCE's Construction Standards and CPUC General Order 95.

21. The evidentiary record contains analyses of a reasonable range of project alternatives including several reconfigured design alternatives, a reduced acreage alternative, and three variations on the No Project/No Action alternative, none of which proved superior in both reducing impacts and meeting project objectives.

22. It is undisputed that the facility could be designed and constructed to minimize the effect of geologic hazards and impacts to potential paleontological resources at the site during project design life.

23. No geologic hazards which would arise due to cumulative effects during operation of the proposed facility were identified during this investigation.

CONCLUSIONS OF LAW

1. The Conditions listed below ensure that project activities will not cause significant adverse direct, indirect, or cumulative impacts to geological, mineralogical, or paleontological resources.

2. Compliance with the Conditions of Certification specified below will ensure that the Palen Solar Power Project conforms to all applicable laws,

ordinances, regulations, and standards related to geological, mineralogical, and paleontological resources as identified in **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

GEO-1 The Soils Engineering Report required by Section 1802A of the 2007 CBC should specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of potential hydro-compaction or dynamic compaction; the presence of expansive clay soils; and the presence of corrosive soils. The report should also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present.

Verification: The project owner shall include in the application for a grading permit a copy of the Soils Engineering Report which addresses the potential for liquefaction; settlement due to compressible soils, ground water withdrawal, hydro-compaction, or dynamic compaction; and the possible presence of expansive clay soils, and a summary of how the results of the analyses were incorporated into the project foundation and grading plan design for review and comment by the Chief Building Official (CBO). A copy of the Soils Engineering Report, application for grading permit and any comments by the CBO are to be provided to the CPM at least 30 days prior to grading.

PAL-1 The project owner shall provide the compliance project manager (CPM) with the resume and qualifications of its paleontological resource specialist (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 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 the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by 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 three 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. Paleontologic resource monitors (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.

Verification:

(1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

(3) Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, 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 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 between 1 inch = 40 feet and 1 inch = 100 feet. If the

footprint of the project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS 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.

Verification:

(1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

(2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

(3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner submits to 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 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 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, 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.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 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 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 CPM-approved worker training. Worker training shall consist of an initial in-person PRS training or may utilize a CPM-approved video or other presentation format during the project kick off for those mentioned above. Following initial training, a CPM-approved video or other approved training presentation/materials, 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 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 paleontologic 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.

Verification:

(1) At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

(2) At least 30 days prior to ground disturbance, the project owner shall submit the training program presentation/materials to the CPM for approval if the project owner is planning to use a presentation format other than an in-person trainer for training.

(3) If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

(4) In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or other approved format) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

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 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 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 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 the CPM at any time.
3. The project owner shall ensure that the PRS notifies 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 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 paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by 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.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

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.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see Condition of Certification **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

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.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

VII. LOCAL IMPACT ASSESSMENT

The effect of a power plant project on the local area depends upon the nature of the community and the extent of the associated impacts. Technical topics discussed in this portion of the Decision consider issues of local concern including **Land Use, Noise, Socioeconomics, Traffic and Transportation, and Visual Resources.**

A. LAND USE

This section addresses the land use issues associated with the Palen Solar Power Project (PSPP), including potential impacts related to Project construction, operation, and decommissioning. The land use analysis focuses on two main issues: (1) whether the project is consistent with local land use plans, ordinances, and policies; and (2) whether the project is compatible with existing and reasonably foreseeable uses.

The determination of significance under the California Environmental Quality Act (CEQA) is based on scientific and factual data related to issues addressed in Appendix G of the CEQA Guidelines, performance standards, or thresholds identified by Energy Commission staff, and thresholds recommended by other public agencies or subject experts, as supported by substantial evidence. Criteria used to determine impacts under CEQA pertain to land use and planning, agriculture and forest resources, and wilderness and recreation, and consider whether or not the project would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.

- Conflict with existing zoning for, or cause rezoning of, forest land [as defined in Public Resources Code section 12220(g)], timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production [as defined by Government Code section 51104(g)].
- Result in the loss of forest land or conversion of forest land to non-forest use.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.
- Directly or indirectly disrupt activities in an established federal, state, or local recreation and/or wilderness area.
- Change the characteristics of a wilderness study area, such that it would not contain the qualities necessary for it to be considered for future designation as wilderness.
- Substantially reduce the scenic, biological, cultural, geological, or other important resource value of federal, state, local, or private recreational facilities or wilderness areas.
- Increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreation facilities that might have an adverse physical effect on the environment.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. The Site

The proposed Palen Solar site is located on a relatively flat, largely undeveloped portion of the Colorado Desert in the Chuckwalla Valley between the Palen Mountains and U.S. Interstate 10 (I-10) in eastern Riverside County, California. See **Land Use Figure 1,** below.) The Applicant has requested a right of way grant on approximately 5,200 acres of land administered by the U.S. Bureau of Land Management (BLM). The construction and operation of the proposed project would involve approximately 4000 acres of which 40 acres are under the County of Riverside's jurisdiction. The 40 acre parcel is privately owned land for which the Applicant has a purchase option. (Ex. 301, p. C.6-3.)

As shown in **Land Use Figures 2 and 3,** below, the project site is dominated by sand and Sonoran creosote brush scrub and has several desert dry wash and unvegetated ephemeral dry wash areas. High voltage electric transmission lines cross the area. (Ex. 301, p. C.6-3.)

2. Potential Impacts

a. Would the project physically divide an established community?

The project site is in an undeveloped portion of the Colorado Desert in eastern Chuckwalla Valley. The unincorporated community of Desert Center (population 150) is the closest community to the project. Desert Center is approximately 10 miles west of the project site. The proposed project would not physically divide an established community. (Ex. 301, p. C.6-4.)

b. Would the project conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect?

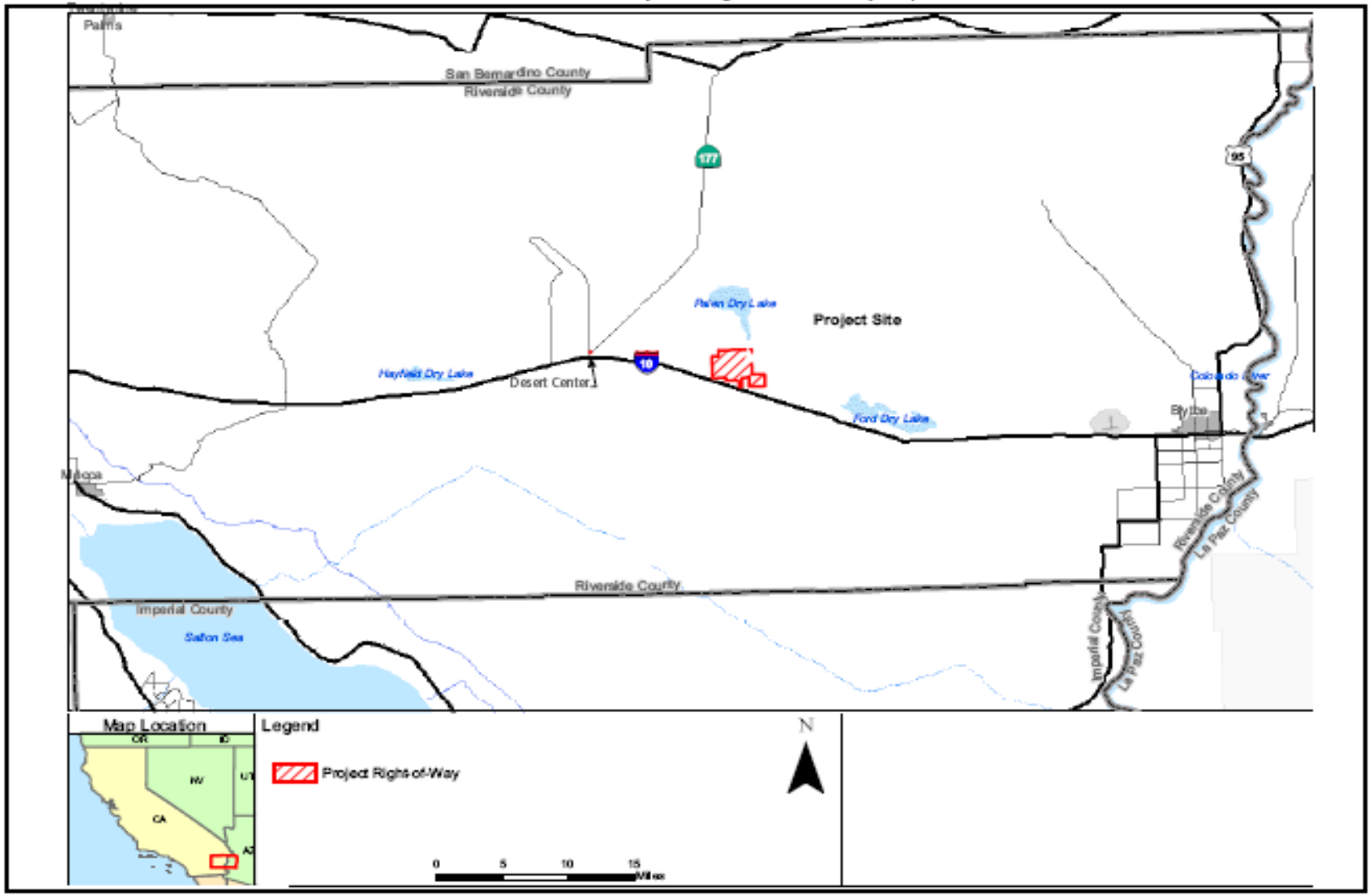
The proposed PSPP would be located on land within the federal California Desert Conservation Area (CDCA) Plan area. The project area is in the "Multiple-Use Class M" land use category, except for the 40-acre parcel in private ownership. The Class M land use category may allow electrical generation plants in accordance with federal, state, and local laws subject to approval of a CDCA Plan amendment by the BLM. The Class M category is also designed to conserve desert resources and to mitigate damage to those resources that permitted uses may cause. (Ex. 301, p. C.6-1.)

The proposed PSPP is also within the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) area. The NECO is a landscape-scale planning effort for most of the California portion of the Sonoran Desert ecosystem that promotes desert tortoise conservation. (Ex. 301, p. C.6-5.)

The NECO designates a portion of the proposed project area within a Multiple-species Wildlife Habitat Management Area (WHMA). The WHMA was established to provide long-term conservation of various species of special concern. There are 183 acres of Desert tortoise federally designated critical habitat present in the southwest portion of the project's disturbance area. The 183 acres is a part of the Chuckwalla Desert Wildlife Management Area. The main body of this management area is located on the south side of I-10. (Ex. 301, p. C.6-5.)

LAND USE - FIGURE 1

Palen Solar Power Project - Regional and Vicinity Map



LAND USE - FIGURE 2

Palen Solar Power Project - Project Site and Surrounding Area

LAND USE - FIGURE 3

Palen Solar Power Project - Existing Project Site View

Without mitigation the PSPP would be a substantial contributor to the cumulatively significant loss of biological resources within the Chuckwalla Valley and the NECO area. Elsewhere in this decision, we have adopted Conditions of Certification to offset direct, indirect, and cumulative impacts to desert tortoise and other special-status species, and to assure compliance with state and federal laws such as the federal and state endangered species acts and regulations protecting waters of the state. A Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) will be required for the project as a Condition of Certification; see the **Biological Resources** section of this Decision. The BRMIMP comprehensively describes avoidance, minimization, and mitigation measures. (Ex. 301, pp. C.6-5 - C.6-6.)

A 40-acre parcel (APN: 810-110-007) within the PSPP area is under the County of Riverside's jurisdiction. Land uses on the parcel are subject to the County's adopted General Plan and its applicable policies. The Eastern Riverside County Land Use Plan shows the proposed project site within the "Open Space-Rural" land use designation (see **Land Use Figure 2**). According to the Riverside County General Plan, Chapter 3 Land Use Element states:

> The intent of this land use plan . . . is to preserve the unique and spectacular open space character of this desert region, and to maintain those existing rural and mineral resource land uses scattered throughout the area.

The following Riverside County General Plan land use policies apply to land designated "Open Space-Rural:"

- ***LU 20.1***: Require that structures be designed to maintain the environmental character in which they are located;
- ***LU 20.2***: Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance;
- ***LU 20.3***: Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use;
- ***LU 20.4***: Ensure that development does not adversely impact the open space and rural character of the surrounding area;
- ***LU 20.5***: Encourage parcel consolidation; and

- ***LU 20.6***: Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character.

(Ex. 301, C.6-6 - C.6-7.)

Raymond Juarez, Urban Regional Planner IV, Riverside County Transportation and Land Management Agency, Planning Department has been designated by the Director of the Riverside County Transportation and Land Management Agency, Planning Department as the contact person for the Energy Commission regarding solar energy projects. Commission staff contacted Mr. Juarez on August 30, 2010, to discuss the PSPP's land use consistency with the County's "Open Space-Rural" land use designation. Mr. Juarez informed Staff that the proposed PSPP would not conform to the County's "Open Space-Rural" land use policies. However, he added that the County is in the process of updating the General Plan which includes revising the general plan land use designation on the project site to allow solar energy generation facilities. Nonetheless, Staff concluded the proposed Palen Solar Energy Project's development, and its structures on the 40-acre parcel would conflict with current land use policies **LU 20.1, LU 20.2,** and **LU 20.4**. (Ex. 301, p. C.6-7; *see also* Record of Conversation, dated August 30, 2010, CEC Docket No. 58399.)

However, the evidence also includes a letter from Bob Lyman, Regional Office Manager, Desert Permit Assistance Center, Riverside County Transportation and Land Management Agency, Planning Department, dated May 20, 2010, (Ex. 33) which states the proposed project would be consistent with Riverside County's "Open Space-Rural" (OS-RUR) general plan land use designation on the 40-acre parcel. Mr. Lyman stated the following:

> After researching the above referenced parcel - I have found it to be compatible with the proposed land use, a solar generating plant. The parcel currently has the land use designation of OS-RUR - the Planning Director has determined that a solar facility is compatible. Zoning for the subject parcel is W-2 and is compatible with a solar facility. If the proposed project was to be processed through the County of Riverside, a land use entitlement would be required. (Exs. 33; 301, p. C.6-8.)

Nearly all of the proposed project site would be on federal land administered by the BLM. The Riverside County General Plan - Eastern Riverside County Land Use Plan, and the Riverside County General Plan land use designations and zoning have limited applicability to this acreage. Local law can be considered applicable only to the extent it does not result in a land use which conflicts with

the federally designated land use. And as we have noted above, the BLM "Multiple-Use Class M" land use category may allow electrical generation plants in accordance with federal, state, and local laws subject to approval of a CDCA Plan amendment by the BLM. (Ex. 301, p. C.6-1.)

The evidence shows that the County is in the process of updating the General Plan land use designation on the project site to allow solar energy generation facilities. While there appear to be conflicting opinions about the proposed project's consistency with Riverside County's General Plan and zoning on the 40-acre parcel, we find that fact, coupled with Mr. Lyman's letter, persuasive here. We find that the proposed PSPP on the 40-acre parcel would be a use permitted in the W-2 Zone and that it is consistent with County land use policies. (Exs. 33; 301, pp. C.6-8 - C.6-9.)

c. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The project site is not within an approved U.S. Fish and Wildlife Service habitat conservation plan under Section 10 of the Endangered Species Act, or within an approved California Department of Fish and Game natural community conservation plan under Section 2800 of the Natural Communities Conservation Act. We therefore find that the proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan. (Ex. 301, p. C.6-9.)

d. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?

The project site and vicinity is characterized largely as undeveloped desert. A preliminary site reconnaissance was conducted on the project site by the Applicant, during which two soil samples were collected. Applicant described the soils on site as consisting of sandy material and classified as poorly graded sand with silt. Across most of the subject property, the soils would be expected to range from silty sand to poorly graded sand with silt.

The BLM's Master Title Plats[1] showing Township 5 South Range 17 East, and Township 6 South Range 17 East of the San Bernardino Meridian, California,

[1] The BLM's Master Title Plats are the foundation of their land records. It's a drawing of the most recent survey or protraction (unsurveyed lands) by township. It's a graphic plat illustrating current federal ownership, agency jurisdiction, and rights reserved to the Federal government on private land within a township (USDOI 2010).

which includes the project area, provide notations that the townships are not suitable for agriculture.

The Riverside County Important Farmland 2008, Sheet 2 and Sheet 3, shows the project area outside of the survey boundary of the area mapped by the California Department of Conservation, Division of Land Resources Protection, Farmland Mapping and Monitoring Program[2] (CDCFMMP 2008). Federal lands in the county were not included in the state's farmland mapping program. (Ex. 301, pp. C.6-9 - C.6-10.)

We therefore find that the proposed PSPP does not convert farmland.

e. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The project site and vicinity has been zoned by the County of Riverside N-A Zone (Natural Assets) and W-2 Zone (Controlled Development Areas). The N-A Zone permits field and tree crops, and grazing among uses which also include museums and menageries, resort hotels, golf courses, and rock crushing plants. The W-2 Zone permits field crops, greenhouses, grazing, nurseries, orchards, among its many uses which also include drive-in theaters, hydroelectric power plants, lumber mills, meat cutting and packaging plants, and radio and television broadcasting stations.

Nearly all of the project area is federal land administered by the BLM. Thus, neither the county's zoning for agricultural use, nor a Williamson Act contract which is executed between a property owner and the county pursuant to the California Land Conservation Act of 1965, as amended, would be applicable on this portion of the project site.

BLM staff at the Palm Springs-South Coast Field Office informed Energy Commission staff "in regards to rangeland management, there are no BLM livestock grazing allotments within the vicinity of the proposed project site. Therefore, no conversion of rangeland would occur, and they would not be adversely affected by construction or operation of the proposed project." (Ex. 301. p. C.6-11.)

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[2] In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland (CCR 2010).

f. Would the project conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production?

The project area and vicinity is characterized as undeveloped desert. Therefore the proposed project does not conflict with zoning for, or cause rezoning of forest land, timberland or timberland zoned Timberland Production.

g. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The project area and vicinity is characterized as undeveloped desert. The proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. Nor would the proposed project involve other changes in the existing environment creating a conversion of farmland or forest land. (Ex. 301, pp. C.6-11 - C.6-12.)

h. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The proposed project is to be constructed on an undeveloped portion of the Colorado Desert in the eastern Chuckwalla Valley. The project area consists of relatively undisturbed unimproved desert dominated by sand and Sonoran creosote brush scrub. The area also has desert dry wash woodland, unvegetated ephemeral dry wash areas, and stabilized and partially stabilized desert dunes, and transmission power lines. The proposed project would not involve other changes in the existing environment creating a conversion of farmland or forest land and would not result in a significant adverse impact under this CEQA criterion. (Ex. 301, p. C.6-12.)

i. Would the project directly or indirectly disrupt activities in an established federal, state, or local recreation and/or wilderness area?

A significant portion of the Chuckwalla Valley and the Palen Valley to the north are in congressionally designated wilderness, generally with low acreages of private or state in holdings. There are two long term visitor areas and a developed campground, as well as numerous back country roads and trails, including the Bradshaw Trail. The nearest federal wilderness area to the project is the Palen/McCoy Wilderness Area, approximately two miles to the north-northeast of the project site. The Chuckwalla Mountain Wilderness Area is approximately three miles south of the project. The project would not disrupt activities within either designated wilderness area.

To engage in most desert recreation activities outside of "open"[3] areas, visitors must use motorized vehicles and usually travel on marked motorized-vehicle route. Riding off-highway vehicles (OHVs) on private property is not legal without written permission of the property owner.

The unincorporated community of Desert Center is the closest community to the project. It is approximately 10 miles west of the project. It has no community parks. There are no regional parks or open space operated by the Riverside County Regional Park and Open Space District in the Chuckwalla Valley. There are no California state public parks within the Chuckwalla Valley.

We therefore find that the proposed project would not directly or indirectly disrupt activities in an established federal, state, or local recreation and/or wilderness area. (Ex. 301, pp. C.6-12 - C.6-13.)

j. Would the project change the characteristics of a wilderness study area, such that it would not contain the qualities necessary for it to be considered for future designation as wilderness?

California BLM currently manages approximately 80 Wilderness Study Areas totaling over 1,360,000 acres, however, the project area is not within any of them. The closest wilderness study areas to the PSPP site are the Beauty Mountain Wilderness Study Area, approximately 30 miles west of the city of Temecula in Riverside County, and the Cady Mountain Wilderness Study Area between Barstow and Baker along I-40 in San Bernardino County. We therefore find that the project would not have an impact on a wilderness study area. (Ex. 301, p. C.6-13.)

k. Would the project substantially reduce the scenic, biological, cultural, geological, or other important resource value of federal, state, local, or private recreational facilities or wilderness areas?

The Chuckwalla-Palen area contains seven California Desert Plan Area wilderness areas administered by the BLM. They include the Big Maria Mountains, Chuckwalla Mountains, Little Chuckwalla Mountains, Orocopia Mountains, Palen/McCoy, Rice Valley and Riverside Mountains Wilderness

[3] BLM lands available for OHV use are designated as either "limited" or "open." In "limited" areas, vehicles are required, at a minimum, to remain on existing individual routes of travel which are designated as open; cross-country travel is prohibited. In "open" areas, vehicle travel is permitted anywhere if the vehicle is operated responsibly in accordance with regulations and subject to permission of private land owners if applicable. OHV and other vehicle use are prohibited in all wilderness areas, except to accommodate specific authorized activities as provided for by law. (USDOI 2002b, pp. 3-26.)

areas. The nearest federal wilderness area to the project site is the Palen/McCoy Wilderness Area, approximately two miles to the north-northeast of the project site. The Chuckwalla Mountain Wilderness Area is approximately three miles south of the project site.

Elsewhere in this Decision we have found that the project will have impacts to visual resources, specifically that the PSPP will introduce prominent structures with industrial character into the foreground to background views from I-10, SR 177, BLM recreational access roads, nearby Wilderness areas, and a few nearby residences, resulting in a substantial degradation of the existing visual character or quality of the site and its surroundings. We have adopted mitigation measures that would reduce these impacts to the extent feasible, and have recommended that the Commission make override findings concerning those impacts that are immitigable. With respect to this CEQA criterion, therefore, we find that the proposed project would substantially reduce the scenic resource value of federal, state, local, or private recreational facilities or wilderness areas. We further find that the project's benefits warrant an override of these impacts. (Ex. 301, pp. C.6-13 - C.6-14.)

l. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?

The unincorporated community of Desert Center is the closest community to the project and is located approximately 10 miles west of the project. It has no community parks. There are no regional parks or open space operated by the Riverside County Regional Park and Open Space District in the Chuckwalla Valley. There are no state parks within the Chuckwalla Valley. We therefore find that the proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities resulting in a substantial physical deterioration or accelerated deterioration of the facility. (Ex. 301, pp. C.6-14 - C.6-15.)

m. Would the project include recreational facilities or require the construction or expansion of recreation facilities that might have an adverse physical effect on the environment?

The proposed project does not include recreational facilities or require the construction or expansion of recreational facilities and, therefore would not create an impact under this CEQA criterion.

3. Cumulative Impacts

Under CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the environmental impact report (EIR) together with other projects causing related impacts" [Cal Code Regs., tit. 14 §15130(a)(1).] Cumulative impacts of the project must be discussed if the incremental effect of a project, combined with the effects of other projects, is "cumulatively considerable." [Cal Code Regs., tit. 14 §15130(a).] Such incremental effects are to be "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." [Cal Code Regs., tit. 14 §15164(b)(1).] Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

The Energy Commission and the BLM have identified a total of 63 solar energy projects on 567,882 acres and 62 wind energy projects on 433,721 acres currently proposed for development in the California desert lands. The construction of all of the projects represents a worst-case scenario. It is not likely that all of these projects would be ultimately developed. (Ex. 1, p. B.3-5.)

PSPP would not contribute to significant cumulative impacts on rangelands and agricultural lands; cumulative impacts to BLM livestock grazing allotments, horses and burros would be less than significant; and no cumulative impacts are identified relative to creation of physical divisions of established residential communities. The project would, however, contribute to a cumulatively significant reduction in open space areas and associated reduction in scenic value due to conversion of currently undeveloped land to industrial solar facilities. (Ex. 301, pp. C.6-23 - C.6-28.)

The evidence shows, however, that notwithstanding the immitigable impacts, consideration needs to be given to the fact that the project is a solar power plant that will help California meet its renewable portfolio standard (RPS) of 33 percent in 2020 and AB 32 greenhouse gas emission reduction goals. As such, it will provide critical environmental benefits by helping the state reduce its greenhouse gas emissions. (10/13/10 RT 9:5 – 10:21; see also the **Greenhouse Gases** section of this Decision.)

These positive attributes must be weighed against the project's adverse impacts. It is because of these benefits and the concerns regarding the adverse impacts that global warming will have upon the state and our environment, including

desert ecosystems, that we recommend that the Commission approve the project based on a finding of overriding considerations, consistent with CEQA Guideline Section 15093 and Section 1755 of the Commission's siting regulations, if the mitigation measures/Conditions of Certification we have adopted herein are implemented. We further find that it would be appropriate for the Commission to find, pursuant to section 1752(k), that the project is required for public convenience and necessity and that there are no more prudent and feasible means of achieving such public convenience and necessity.

RESPONSE TO COMMENTS

In its comments on the PMPD submitted November 29, 2010, intervenor CBD asserts that the project site is within lands protected under various federal, state and local laws, and that we have failed to find both that the project, as mitigated, will not adversely impact those lands and that the approval of the agency having jurisdiction over such lands has been obtained. In making the first assertion CBD apparently has overlooked our discussions in this Land Use section concerning the project's LORS compliance and consistency with applicable land use plans, policies and regulations.

As for the matter of approval of the agency having jurisdiction over the site, it is undisputed and a matter of public record that the applicant has applied for a Right-of-Way grant from the BLM. Obviously, the applicant's ability to construct the project is dependent upon the receipt of such grant. Whether BLM makes its determination before, simultaneously with, or after the issuance of this Decision is of no consequence. Section 1752(f) of our regulations requires a finding that the approval of the agency having jurisdiction has been obtained in order to ensure that we do not allow construction of a project without approval of the other agency. With the BLM approval process running concurrently with ours, there is no danger of that happening. Applicant cannot construct the project without BLM's right of way grant. If BLM grants the right of way, approval of the other agency has been obtained and the project may be constructed. If BLM denies the right of way grant, the project may not be constructed despite our approval.

We are adding language to Condition of Certification **LAND-1**, to require that the applicant submit to the Construction Project Manager, prior to the start of construction, documentation of the Right-of-Way grant as well as a copy of the U.S. Bureau of Land Management (BLM) approved project-specific amendment to the California Desert Conservation Area Plan (CDCA) permitting the construction/operation of the proposed Palen Solar Power Project.

FINDINGS OF FACT

Based upon the persuasive weight of the evidence, we make the following findings and reach the following conclusions:

1. The proposed project area is located on public land (federal land) administered by the BLM) except for a 40 acre parcel in private ownership under the County of Riverside's jurisdiction. The Applicant has applied for a Right-of-Way grant from the BLM, and that application is currently under review by the BLM. The Right of Way grant is required for Applicant to construct the project.
2. The proposed project is within the federal California Desert Conservation Area (CDCA) Plan area. The project area is in the "Multiple-Use Class M" land use category, except for a 40-acre parcel. The Class M land use category allows electrical generation plants in accordance with federal, state, and local laws subject to the approval of a CDCA Plan amendment by the BLM.
3. The proposed project on the 40 acre parcel would be a use permitted in Riverside County's "W-2" Zone (Controlled Development Areas).
4. The proposed project does not divide the physical arrangement of an established community.
5. The proposed project would not conflict with a habitat conservation plan approved by the U.S. Fish and Wildlife Service, or a natural community conservation plan approved by the California Department of Fish and Game.
6. The proposed project does not convert prime farmland, conflict with existing county zoning for agricultural use or a Williamson Act contract, or result in the conversion of farmland to a non-agricultural use, or rangeland to non-rangeland use.
7. The proposed project does not conflict with zoning for or cause rezoning of forest land, timberland or timberland zoned Timberland Production. The project does not result in the loss of forest land or conversion of forest land to non-forest use.
8. The project area is not located in a designated federal wilderness area.
9. There are no regional parks or open space operated by the Riverside County Regional Park and Open Space District, or state parks within the Chuckwalla Valley. The Desert Center area has no community parks. There are no BLM designated OHV areas in Riverside County where riding off of designated open routes is permitted.
10. The project, in conjunction with other proposed projects, would reduce the scenic value of wilderness areas.

11. The project's impacts on open space would be cumulatively considerable when considered in combination with other solar and wind projects proposed in the region.

12. The project, as mitigated, will comply with applicable federal laws, ordinances, regulations and standards contained in the pertinent portion of **Appendix A** of this Decision.

13. A Statement of Overriding Considerations will be required for impacts associated with the project that will not be mitigated to less than significant levels.

CONCLUSIONS OF LAW

1. The record contains an adequate analysis of the land use laws, ordinances, regulations, and standards that are relevant to the project and establishes that the project will not create any unmitigated, significantly adverse direct land use effects as defined under the California Environmental Quality Act.

2. The PSPP will create significant cumulative impacts related to loss of open space and reduction of scenic value. Overriding considerations warrant the approval of the project as mitigated through the Conditions of Certification we adopt in this Decision.

3. The project is required for public convenience and necessity and there are no more prudent and feasible means of achieving such public convenience and necessity.

CONDITIONS OF CERTIFICATION

LAND-1 Prior to the start of construction, the Applicant shall provide to the Compliance Project Manager (CPM) documentation of the U.S. Bureau of Land Management (BLM) Right-of-Way grant and the BLM-approved project-specific amendment to the California Desert Conservation Area Plan (CDCA) permitting the construction/operation of the proposed Palen Solar Power Project.

Verification: Prior to the start of construction, the Applicant shall submit to the CPM a copy of the BLM approved project specific amendment to the CDCA Plan permitting the Palen Solar Power Project.

B. TRAFFIC AND TRANSPORTATION

This section addresses the extent to which the project will affect the local area's transportation network. The record contains an analysis of potential problems related to construction and operational traffic.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Project Site and Vicinity

The proposed Palen Solar Power Project (PSPP) site is located in eastern Riverside County about 10 miles east of the unincorporated community of Desert Center, 3 miles east of the southeastern end of Joshua Tree National Park, and about 0.5 mile north of U.S. Interstate-10. The site lies on approximately 40 acres of private property and 5,160 acres of federal land managed by the Bureau of Land Management (BLM)[1]. Site access would be from an extension of Corn Springs Road at the I-10 interchange. The Corn Springs Road extension would be about 1,350 feet long and would run east from just north of the I-10 Corn Springs Road entrance/exit ramps to the project site entrance. (Ex. 300, p. C.10-2.)

The, PSPP would be constructed in phases, with construction scheduled to begin in late 2010 and end in the fourth quarter of 2013. Commercial operation of Unit #1 is scheduled to begin in mid-2013, with commercial operation of Unit #2 following by the end of 2013.

When evaluating project-related impacts on the local transportation system, we apply level of service (LOS) determinations. LOS is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the traffic congestion level on a particular roadway or intersection in terms of speed, travel time, and delay. The Highway Capacity Manual 2000, published by the Transportation Research Board Committee on Highway Capacity and Quality of Service, includes six levels of service for roadways and intersections. These levels of service range from LOS A, the best and smoothest operating conditions, to LOS F, the worst, most congested operating conditions.
Riverside County uses LOS criteria to assess the performance and capacity of its street and highway system. In Riverside County's General Plan Circulation Element, Policy C 2.1 provides a target of LOS C or better for all conventional

[1] See Traffic and Transportation Figures 1 and 2 for views of the regional and local transportation network in the project vicinity.

State highways (including I-10) and County-maintained roads. In other words, the proposed PSPP project would create a significant impact if it caused highways, roadways, or intersections currently operating at LOS C or better to degrade to LOS D or worse.

Local highways and roads in the project vicinity are:

U.S. Interstate 10: This is an east-west regional arterial highway that crosses much of the southern United States. It runs from the Los Angeles area east to Phoenix, Arizona and on across the country to Jacksonville, Florida. In the project area, the speed limit is 70 miles per hour and the road is fully improved to freeway status with two lanes in each direction,

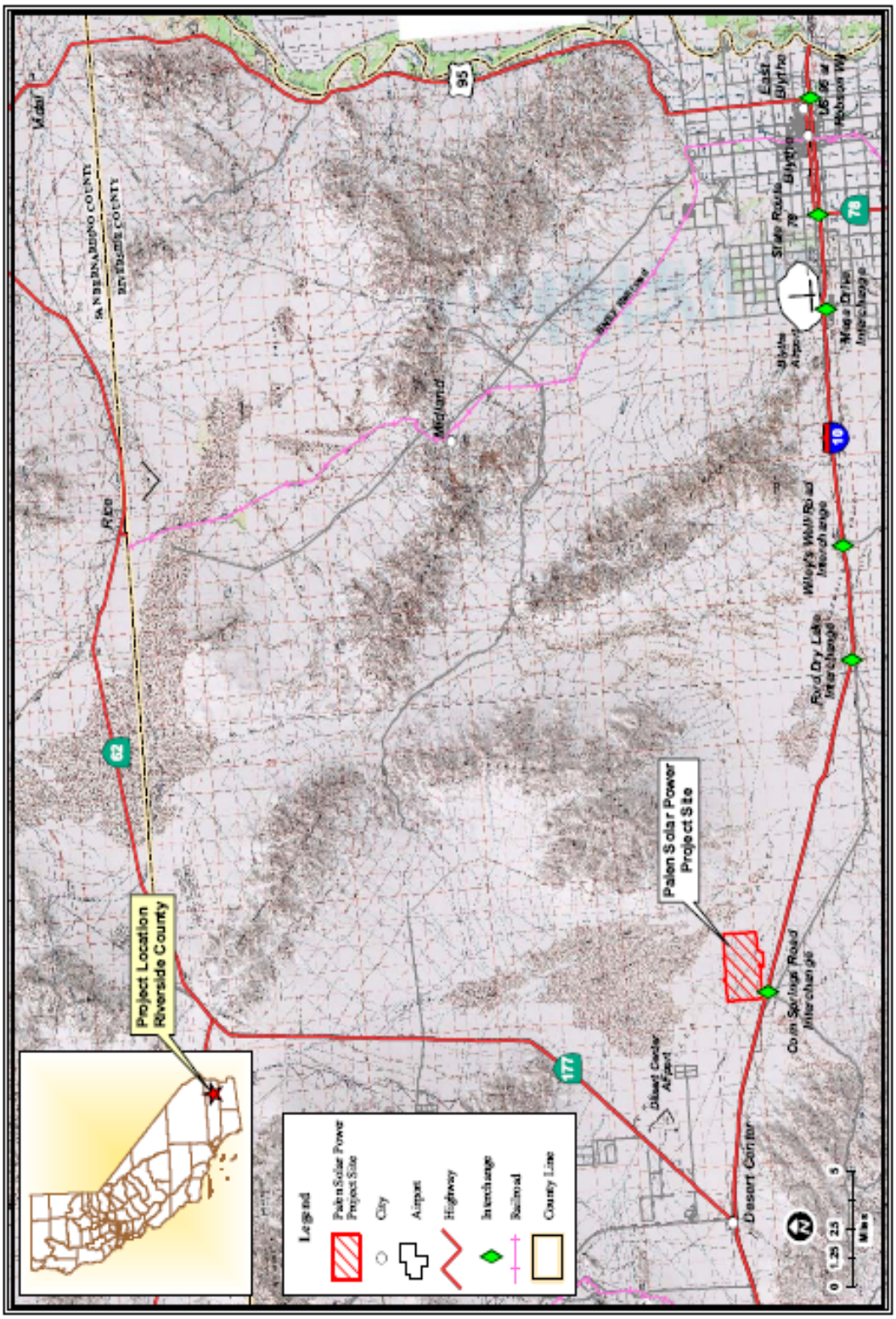
Corn Springs Road: This is an exit off of I-10 accessed by a diamond-configured interchange. The interchange includes single-lane ramps with ramp junctures, where stop signs control traffic from I-10 before it enters Corn Springs Road. Corn Springs Road is a relatively short road that runs north toward the project site, as well as south, where it intersects with Chuckwalla Valley Road. Corn Springs Road has curb and gutter, but no bicycle or pedestrian facilities.

Chuckwalla Valley Road: Chuckwalla Valley Road is a minor local access road running in an east-west direction just south of I-10 in the vicinity of the project site. It is a two-lane frontage road extending from the southern part of the Corn Springs Road interchange to the Ford Dry Lake Road interchange approximately 10 miles to the east. Stop signs on the Chuckwalla Valley Road approaches control the Corn Springs Road/Chuckwalla Valley Road intersection. Chuckwalla Valley Road has curb and gutter, but no bicycle or pedestrian facilities.

There is no rail or bus service near the project and bicycle and pedestrian facilities are “minimal-to-none”. There are no airports sufficiently close to the project (within 20,000 feet or less) to require FAA notification. (Ex. 300, p. C.10-4.)

TRAFFIC AND TRANSPORTATION - FIGURE 1

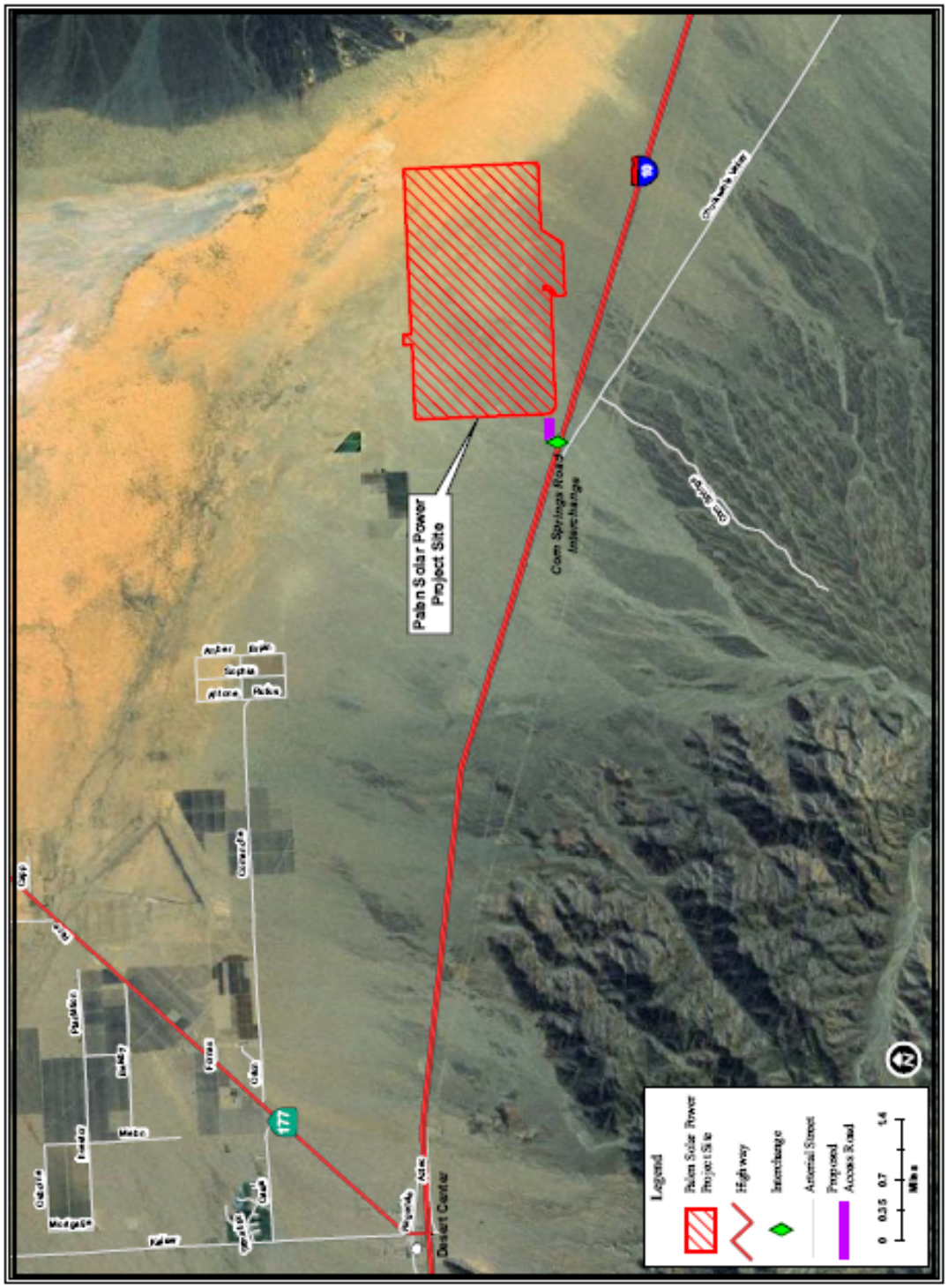
Palen Solar Power Project - Regional Transportation Network



CALIFORNIA ENERGY COMMISSION - SITING TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission Statewide Power Plant Maps 2010 - Tele Atlas

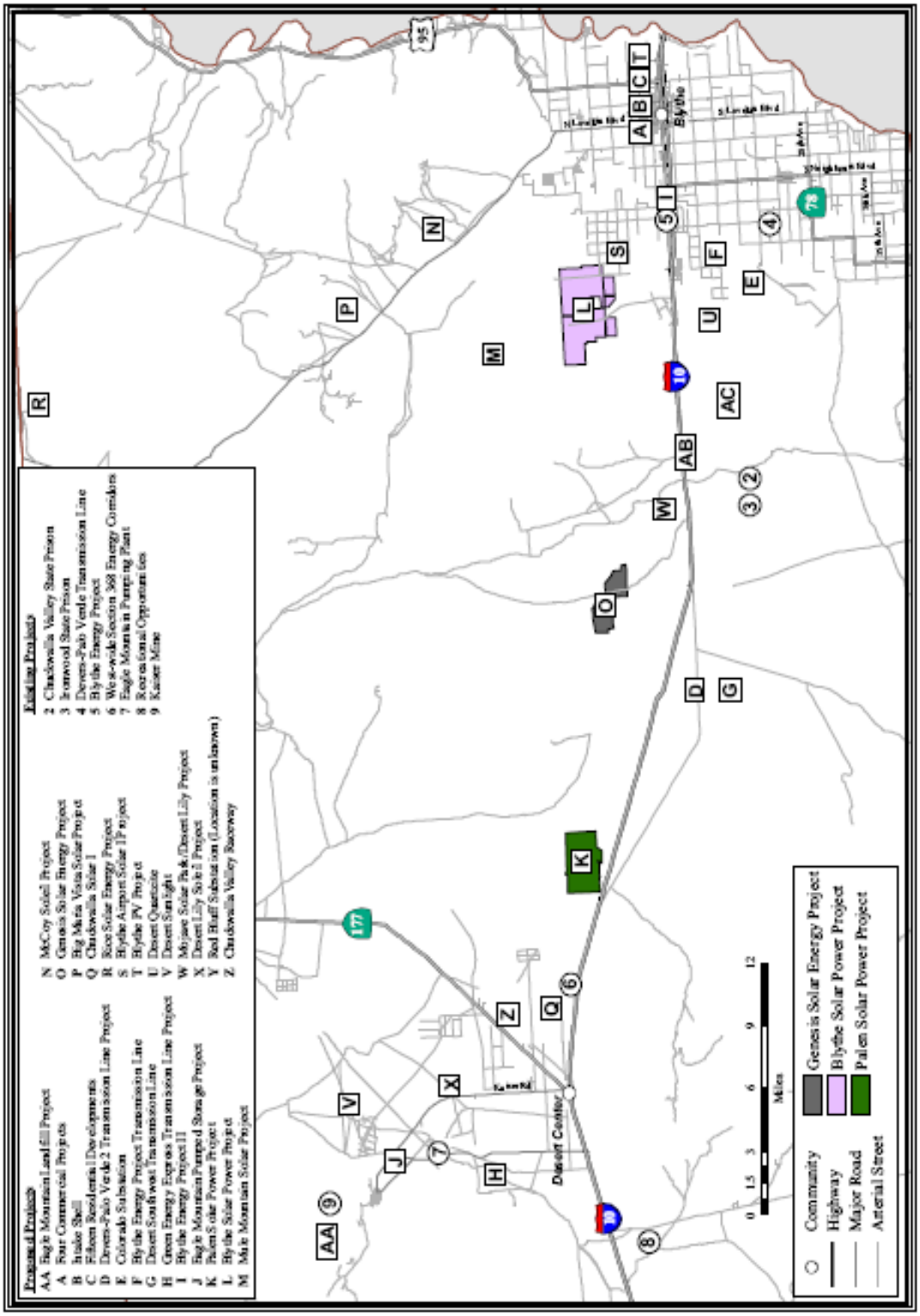
TRAFFIC & TRANSPORTATION



TRAFFIC AND TRANSPORTATION - FIGURE 2
Palen Solar Power Project - Local Transportation Network

CALIFORNIA ENERGY COMMISSION - SITING,TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: California Energy Commission Statewide Power Plant Maps 2010 - Tele Atlas

TRAFFIC & TRANSPORTATION



TRAFFIC & TRANSPORTATION - FIGURE 3

Palen Solar Power Project - I-10 Corridor Existing and Proposed Projects

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, Bureau of Land Management

TRAFFIC & TRANSPORTATION

2. Construction Period Impacts and Mitigation

Over the course of the 39-month construction period, the average workforce is estimated to be about 566 workers a day. If each worker is commuting in his or her own vehicle, approximately 1,132 trips per day would be generated. Peak construction is expected to occur during Month 17 (Year 2012) of the 39-month construction period. The average workforce during this peak is estimated to be about 1,145 workers a day. Approximately 2,290 daily one-way worker commute trips would occur during the peak construction period. Most of these trips would occur during the peak morning and afternoon travel times. Workers from Palm Springs, the Los Angeles basin, and the Indio area would travel east on I-10 to the project site, while workers from Blythe and the Arizona communities of Quartzsite, Ehrenberg, and Cibola would follow I-10 west to the project site. (Ex. 300, p. C.10-6.)

Construction of the PSPP would require that oversized equipment, such as the steam turbine generator and main transformers, be transported to the site via multi-axle trucks. The work is forecasted to generate an average of approximately 20 to 30 daily one-way truck trips, with a peak of approximately 40 daily one-way truck trips. Impacts related to vehicle size limits and driver licensing, hazardous cargoes, and road damage repair are mitigated by Conditions of Certification **TRANS-1**, **TRANS-2**, **TRANS-3**, respectively. Peak construction would cause a noticeable increase in traffic on I-10. However, with Condition of Certification **TRANS-4**, all study roadways and intersections would operate at LOS C or above during project construction. That condition also requires the project owner to prepare a traffic control plan to reduce work trips through means such as staggered work shifts, off-peak work schedules, and an incentive program for carpooling.

Traffic and Transportation Table 1, which compares peak hour traffic volume and LOS on all study roadways during the Year 2012 without the PSPP and the Year 2012 with the PSPP (during peak construction). Traffic and Transportation Table 2 compares peak hour delay and LOS on all study intersections during the Year 2012 without the PSPP and the Year 2012 with the PSPP (during peak construction). For the Year 2012 with the PSPP, the table shows unmitigated traffic conditions, or the conditions these intersections would experience without the traffic control plan required by Condition of Certification **TRANS-4**.

Traffic and Transportation Table 1
Peak Hour Volumes and LOS on Study Roadways During Peak Construction

Roadway Segment	Construction Year (2012) Volume without PSPP	LOS	Construction Year (2012) Volume With PSPP	LOS
I-10: West of the project site	3,145	A	3,716	A
I-10: East of the project site	3,145	A	3,717	A
Corn Springs Road	Negligible	A	1,141	B

Notes:
Volume is peak hour volume
Caltrans Year 2007 traffic volumes were expanded to Year 2012 using the same rate of expansion (3.74%/year) seen during 2004-2007.

Traffic and Transportation Table 2
Peak Hour Delay and LOS on Study Intersections During Peak Construction

Study Intersection	Construction Year (2012) Conditions without PSPP				Construction Year (2012) Conditions with PSPP			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
I-10 Westbound Ramps/Corn Springs Road	Negligible	A	Negligible	A	38.1	E	5	A
I-10 Eastbound Ramps/Corn Springs Road	Negligible	A	Negligible	A	23.0	C	5	A

Notes:
Caltrans Year 2007 traffic volumes were expanded to Year 2012 using the same rate of expansion (3.74%/year) seen during 2004-2007.

Source: Ex. 300, p. C.10-7.

Heavy equipment that would be used to construct a new transmission line from the PSPP to a new SCE substation includes cranes, cement mixers and drilling equipment. Transmission line construction workers and delivery vehicles will be dispersed along the transmission line route.

There are currently two proposed locations for the SCE substation, so the exact length (7.5 or 15 miles) and route of the transmission line would vary depending on the substation's final location. Regardless of the substation location, the transmission line would exit the northwest corner of the PSPP and travel west and south through BLM lands, crossing I-10 and traveling south into the substation. Construction of the transmission line would not cause significant impacts to traffic volumes and LOS; because transmission line construction is not

expected to occur at the same time as peak construction employment and the number of workers would be low. (Ex. 300, p. C.10-7.)

However, construction of the transmission line within the right-of-way of I-10 could potentially cause traffic delays and damage to roadways. To mitigate these impacts, we have required Condition of Certification **TRANS-3** to require that the owner restore all roads damaged by construction activities; **TRANS-4** to require the owner to provide access to adjacent properties during construction of linear facilities; and **TRANS-5** to require the owner to obtain encroachment permits from Caltrans and comply with the limitations on encroachment.

3. Operation Impacts and Mitigation

a. Vehicle Traffic

Operation of the PSPP would require a labor force of about 134 employees to staff the facility 24 hours a day, 7 days a week. This would create approximately 268 daily one-way trips, assuming that workers travel in their own individual vehicles. Because employees would arrive and depart at different times throughout the day, they would generate less than 100 daily peak hour trips, even if every employee commutes alone. The operations workforce would be likely to use the same routes to access the project as would the construction crews. Operation of the PSPP would also generate minor truck traffic during activities such as supply delivery and off-site waste shipments. Project operation is anticipated to generate up to 6 truck trips per day, which would not affect the LOS on study roadways and intersections. (Ex. 300, p. C.10-8.)

During project operation, all study roadway segments and intersections would continue to operate at LOS A, the same LOS experienced currently at these locations prior to development of the PSPP. Thus there would be no impact and therefore, no mitigation for operation-related impacts is required.

Traffic and Transportation Table 3
Peak Hour Volumes and LOS on Study Roadways During Project Operation

Roadway Segment or Intersection	Standard Operations Year (2014) Volume with PSPP	LOS
I-10: West of the project site	3,245	A
I-10: East of the project site	3,245	A
Corn Springs Road	125	A
Notes: Caltrans Year 2007 traffic volumes were expanded to Year 2014 using the same rate of expansion (3.74%/year) seen during 2004-2007.		

Source: Ex. 300, p. C. 10-9.

Traffic and Transportation Table 4
Peak Hour Delay and LOS on Study Intersections During Project Operation

Study Intersection	Standard Operations Year (2014) Volume with PSPP			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
I-10 Westbound Ramps/Corn Springs Road	8.7	A	8.4	A
I-10 Eastbound Ramps/Corn Springs Road	9.2	A	9.4	A
Notes: Caltrans Year 2007 traffic volumes were expanded to Year 2014 using the same rate of expansion (3.74%/year) seen during 2004-2007.				

Source: Ex. 300, p. C. 10-9.

Access to the site for emergency services vehicles is adequate given that an emergency vehicle could reach the project property directly from I-10 at Corn Springs Road. The proposed project operation also would also not alter rail transportation. No rail tracks exist on or near the project site. In addition, there are no airports within 20,000 feet of the PSPP, so no FAA notification is required. (*Id*.)

b. Glint and Glare

PSPP's Unit 2 is closest to I-10 at approximately 343 meters (1,125 feet) from the highway. At this distance, there is no potential for retinal damage from the solar facility. (Ex. 300, p. C.10-9.)[2]

[2]Unless an individual is near the focal point of the collector, there is no risk of permanent eye damage (retinal burn) for an exposure of 0.15 seconds, which is the typical blink reflex time.

The evidence establishes that the major glint or glare issue for motorists would be from specular reflections from the mirrors in the mornings and evenings during the summer when the sun rises and sets to the north. During these times, there may be glare visible to motorists driving west (during the morning) or east (during the evening) from the south end of the trough collectors or when the collectors are moving off-axis or from the stow position. To mitigate these potential glare impacts, Condition of Certification **TRANS-6** requires moving the collectors to or from stow position only after sunset or before sunrise. Condition of Certification **VIS-4**, in the **Visual Resources** section of this document, would require slatted fencing between the project and I-10. This fencing would help mitigate any glare caused by spillage from the south end of the collectors.

c. Transport of Hazardous Materials

Both the construction and operation of the proposed PSPP would involve the transport of hazardous materials to the site. Heat transfer fluid would be delivered during construction, and two weekly deliveries of liquefied petroleum gas (LPG) would be made during project operation. In addition to the governing federal and state regulations, Condition of Certification **TRANS-2** requires that the project owner secure permits and/or licenses from the California Highway Patrol and Caltrans for the transport of hazardous materials. In addition, Condition of Certification **HAZ-3** in the **Hazardous Materials Management** section of this Decision would require the applicant to develop and implement a Safety Management Plan for the delivery of hazardous materials.

d. Parking Capacity

During the construction period parking would be provided by a temporary on-site parking area of approximately 10 acres, which would be relocated around the project site as needed during different stages of construction. The parking area would be large enough to accommodate all construction workforce vehicles even if workers commuted individually. However, during operations, employees would park on-site in a 47,500 square-foot parking area, which would accommodate about 135 parking spaces, assuming 350 square feet per vehicle is needed. This would adequately accommodate the 134-employee workforce, and would not create any adverse impacts. (Ex. 300, p. C.10-10.)

4. Alternatives

The record contains evidence of a reasonable range of alternatives to the proposed project as well as several scenarios for No Project/No Action alternatives. (Ex. 300, pp. C.4-12 to C.4-17.) Like the proposed project, impacts related to each of the three reconfigured alternatives would be less than significant with mitigations and would not cause unacceptable LOS. The No Project alternatives would avoid traffic and transportation impacts related to the PSPP. However, under some No Project scenarios, a continuing state mandate for renewable generation would lead to similar solar projects being built at the site or at some other site. Such a project would create similar traffic and transportation impacts as those of the proposed project.

5. Project-Related Future Actions

In order to transmit the power generated at the PSPP to the electricity grid, a new substation is required. Southern California Edison Company (SCE) would construct and operate the new Red Bluff Substation which would allow the electricity to be carried by the Devers-Palo Verde No. 1 (DPV1) 500-kV transmission line. Because detailed design information is not yet available for the substation, its impacts will be fully evaluated in a future EIS prepared by the BLM. However, based on information currently in evidence, we have determined that construction of the Red Bluff Substation would result in a temporary increase in traffic volumes on the regional and local roadways that provide access to the substation site, i.e., Rice Road (SR 177), Corn Springs Road, and I-10. Based on the construction of other 230/500-kV substations, daily workforce would be expected to be comprised of 10 to 20 workers on a typical day of construction activity, and fewer than 10 truck trips per day would be generated. The workers' vehicles, trucks, and equipment would be parked/stored at the project site. (Ex. 300, p. C.10-7.)

Large vehicles delivering substation equipment and materials and oversized vehicles used in the construction process may affect traffic flow on one or more of the roadways, resulting in a safety hazard. However, these potential impacts could be avoided through mitigation we have adopted. In addition, there is potential for damage to existing roads by vehicles and equipment (overhead line trucks, crew trucks, concrete trucks, etc.) that would be entering and leaving roads within the project area. Normal operation of the Red Bluff Substation is expected to have negligible impacts on the ground transportation system (roadways), as it is unlikely that there would be any full time operators of the

substation that would commute to the site, and inspection and maintenance activities would generate only a minor volume of vehicular traffic. The temporary nature of the substation construction coupled with the implementation of mitigation measures result in the potential impacts of the substation to traffic and transportation being less that significant.

6. Cumulative Impacts

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable, meaning that the incremental effects of an individual project are significant when viewed in connection with the effects of (1) past projects; (2) other current projects; and (3) probable future projects (Cal. Code Regs., tit.14, § 15130). According to the National Environmental Policy Act (NEPA), cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.7).

The record includes analysis of the I-10 corridor of Eastern Riverside County, as affected cumulatively by the proposed Blythe, Palen, and Genesis solar projects. These three projects were included in the cumulative analysis because: (1) access to all three projects is from I-10, (2) all three projects exist in close proximity to one another, and (3) their construction schedules would overlap.

In the I-10 corridor in the vicinity of these projects approximately 20 additional energy-related projects, including solar, wind, pumped storage, and transmission lines, are being considered or expected to be considered for development by the Federal Energy Regulatory Commission (FERC); Bureau of Land Management (BLM); and the Energy Commission. In addition, local residential and commercial development is proposed during this period. As a result, traffic could be cumulatively affected[3].

The three projects analyzed solar projects are expected to employ more than one thousand workers during the construction period. For all projects, the construction workers would arrive at the respective project sites via I-10 east and I-10 west.

For the Blythe Solar Power Plant, during month 16, the estimated construction peak would generate about 2,000 one-way worker commute trips per day. In the case of the Palen project, the worst-case scenario would yield a peak trip

[3] Traffic and Transportation – Figure 3 shows the I-10 corridor with existing and proposed projects.

generation of approximately 1,145 inbound trips during the morning peak period and another 1,145 outbound trips during the evening peak hour. On the Genesis project, the worst-case scenario would yield a peak trip generation of approximately 1,093 inbound trips during the morning peak period and another 1,093 outbound trips during the evening peak hour.

Because Blythe, Palen, and Genesis would have overlapping construction schedules, traffic impacts could potentially be exacerbated locally along I-10. Therefore, we have adopted Condition of Certification **TRANS-4** to require a traffic plan for Palen. The Blythe and Genesis projects also require traffic plans. The traffic plans would include measures such as staggered work shifts, off-peak work schedules, travel restrictions, and incentives for carpooling to mitigate potential cumulative impacts on I-10 during construction periods. Nevertheless, even with implementation of Condition of Certification **TRANS-4**, there may be some cumulative impacts to I-10 resulting from the other projects in the area, and LOS may decrease. However, the conditions we have adopted would ensure that Palen's contribution to this impact would not be cumulatively considerable.

The evidence of record also includes Staff analysis showing that the PSPP, if constructed and operated as planned, as well as the Reconfigured Alternative, Reconfigured Alternative #2, Reconfigured Alternative #3, and the Reduced Acreage Alternative, would not conflict with the applicable LORS identified in Appendix A of this Decision. (Ex. 300, p. C.10-24.)

FINDINGS OF FACT

Based on the evidence, we make the following findings:

1. All roads and intersections in the project vicinity operate at acceptable levels of service and would continue to do so after the addition of traffic associated with the construction and operations of the PSPP.

2. The Palen Solar Power Project (PSPP) would be consistent with the County of Riverside General Plan Circulation Element.

3. The PSPP would not have a significant adverse impact on the local and regional roadway network.

4. Adequate parking for workers and supply laydown space would be provided on site.

5. During construction, Conditions of Certification would ensure the safe transportation to the PSPP site via I-10 of pieces of equipment that exceed roadway load or size limits.

6. PSPP would provide adequate emergency vehicle access roads.

7. Because the PSPP's distance from the nearest airport, is greater than the approximately 3.8-mile horizontal radius requiring FAA notification, the PSPP will have no impact on the Desert Center Airport, Blythe Airport, or Palm Springs International Airport, and the project would not impact aviation safety.

8. Because of the PSPP's great distance from the nearest rail and bus service, the project would have no impact on these forms of transportation.

9. The PSPP will not have significant glint and glare impacts because Condition of Certification **TRANS-6** requires the project owner to move the collectors to or from stow only after sunset or before sunrise and to develop and implement an emergency glare response plan.

10. Condition of Certification **TRANS-3**, will require the owner to restore all roads damaged by construction activities.

11. Condition of Certification **TRANS-4**, which requires the owner to develop and implement a Traffic Control Plan (TCP), including a plan for reducing peak construction workforce vehicle trips.

12. Conditions of Certification would ensure the safe transport of hazardous materials to and from the project site.

13. Projects which have been constructed, are undergoing construction, or are otherwise reasonably foreseeable, have been considered in the cumulative impact analyses of this record. .

14. Conditions of Certification are included to reduce and mitigate the transportation-related impacts of the PSPP to the extent possible and to a less than significant level.

15. The record includes the analysis of a reasonable range of alternatives to the PSPP, as well as several scenarios for No Project/No Action alternatives. Because the PSPP will not have significant impacts on traffic and transportation, none of the alternatives would eliminate any significant impacts to traffic or transportation.

CONCLUSIONS OF LAW

1. The PSPP as proposed, as well as the Reconfigured Alternative, Reconfigured Alternative #2, Reconfigured Alternative #3, and the Reduced Acreage Alternative would all comply with applicable LORS related to traffic and transportation.

2. Implementation of the following Conditions of Certification will result in mitigation of significant direct, indirect, or cumulative impacts to traffic and transportation, to less than significant levels.

CONDITIONS OF CERTIFICATION

TRANS-1 The project owner shall comply with limitations imposed by Caltrans District 8 and other relevant jurisdictions, including the County of Riverside, on vehicle sizes and weights and driver licensing. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports (MCRs), the project owner shall report permits received during that reporting period. In addition, the project owner shall retain copies of permits and supporting documentation on-site for Compliance Project Manager (CPM) inspection if requested.

TRANS-2 The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transport of hazardous materials.

Verification: In the MCRs, the project owner shall report permits and/or licenses for hazardous substance transportation received during that reporting period. In addition, the project owner shall retain copies of permits, licenses, and supporting documentation on-site for CPM inspection if requested.

TRANS-3 The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner, as directed by the CPM. Repair and restoration of access roads may be required at any time during the construction phase of the project to assure safe ingress and egress.

Verification: At least 30 days prior to the start of mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way segments and/or intersections and shall provide the CPM and the affected local jurisdictions and Caltrans (if applicable) with a copy of these images. The project owner shall rebuild, repair and maintain all public roads,

easements, and rights-of-way in a usable condition throughout the construction phase of the project.

At least 30 days prior to the start of site mobilization, the project owner shall consult with the County of Riverside and Caltrans District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the County of Riverside and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Within 60 calendar days after completion of construction, the project owner shall meet with the CPM, the County of Riverside, and Caltrans District 8 to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide to the CPM a letter signed by the County of Riverside and Caltrans District 8 stating their satisfaction with the repairs.

TRANS-4 Prior to the start of construction of the PSPP, the project owner shall prepare and implement a Traffic Control Plan (TCP) for the PSPP's construction and operations traffic. The TCP shall address the movement of workers, vehicles, and materials, including arrival and departure schedules and designated workforce and delivery routes.

The project owner shall consult with the County of Riverside and the California Department of Transportation (Caltrans) District 8 office in the preparation and implementation of the Traffic Control Plan (TCP). The project owner shall submit the proposed TCP to the County of Riverside and the Caltrans District 8 office in sufficient time for review and comment, and to the Energy Commission Compliance Project Manager (CPM) for review and approval prior to the proposed start of construction and implementation of the plan.

The CPM shall review and approve the TCP or identify any material deficiencies within thirty (30) days of receipt. The project owner shall provide a copy of any written comments from the County of Riverside and the Caltrans District 8 office and any changes to the TCP to the CPM prior to the proposed start of construction.

The Traffic Control Plan (TCP) shall include:

- A work schedule and end-of-shift departure plan designed to ensure that stacking does not occur at intersections necessary to enter and exit the project sites. The project owner shall consider using one or more of the following measures designed to prevent stacking: staggered work shifts, off-peak work schedules, and/or restricting travel to and departures from each project site to 10 or

fewer vehicles every three minutes during peak travel hours on I-10.

- Provisions for an incentive program, such as employer-sponsored commuter checks, to encourage construction workers to carpool and/or use van or bus service.
- Limitation of truck deliveries at the project site to only off-peak hours.
- A heavy-haul plan addressing the transport and delivery of heavy and oversized loads requiring permits from the California Department of Transportation (Caltrans) or other state or federal agencies.
- Timing of heavy equipment and building material delivery to the sites
- Parking for workforce and construction vehicles.
- Emergency vehicle access to the project site.
- Provisions for redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow.
- Placement of signage, lighting, and traffic control devices at the project construction site and laydown areas.
- Placement of signage along northbound Corn Springs Road and at the entrance of each of the I-10 westbound and eastbound off-ramps at Corn Springs Road notifying drivers of construction traffic throughout the duration of the construction period.
- Placement of signage to redirect traffic from Corn Springs Road during construction activities related to roadway realignments and pipeline installation in and across the Corn Springs Road right-of-way
- Temporary closing of travel lanes, if necessary.
- Access to adjacent residential and commercial property during the construction of all linears

Verification: At least 60 calendar days prior to the start of construction, including any grading or site remediation on the power plant site or its associated easements, the project owner shall submit the proposed TCP to the County of Riverside and the Caltrans District 8 office for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the County of Riverside and the Caltrans District 8 office requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from either the County of Riverside and the Caltrans District 8 office, along with any changes to the proposed Traffic Control Plan, to the CPM for review and approval.

TRANS-5 The project owner or contractor shall comply with Caltrans' and other relevant jurisdictions' limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and any other relevant jurisdictions.

Verification: In the MCRs, the project owner shall report permits received during that reporting period. In addition, for at least six months after the start of commercial operation, the project owner shall retain copies of permits and supporting documentation on-site for CPM inspection if requested.

TRANS-6 To reduce glint and glare from the Project, the Project Owner shall implement the following measures during operation of any unit:

1. Ensure the mirrors are brought out of stowage before sunrise and are aligned to catch the first rays of the morning sun;
2. Ensure the mirrors are returned to stow position after sunset;
3. As soon as is feasible, redirect malfunctioning mirrors to the east in a manner so that there is no reflection from the sun as the sun continues west; and
4. Establish a toll-free number for the public to report complaints related to glint and glare and post such number in the same location as that required in **Compliance-9**. If the project owner receives a complaint regarding glint or glare it shall investigate to determine whether the complaint is legitimate and if the project is the source of such glint or glare. If it is determined that the project is the source of such glint or glare and the glint or glare is causing human health or safety hazards, the project owner shall take all feasible measures to reduce the glint or glare. Such measures may include localized screening. The project owner shall notify the CPM within 3 days of receiving a glint or glare complaint. As soon as the complaint has been resolved the project owner shall submit to the CPM a report in which the complaint as well as the actions taken to resolve the complaint are documented. The report shall include (a) a complaint summary, including the name and address of the complainant; and (b) a discussion of the steps taken to investigate the complaint, the reasons supporting a determination of whether or not the complaint is legitimate, and the steps taken to address the complaint and the final results of these efforts. In the monthly compliance report, the project owner shall describe any

complaints it received that month that it determined not to be legitimate and shall explain the basis of its determination.

Verification: 90 days prior to the start of operation of any unit, the project owner shall prepare and submit to the CPM for review and approval a plan describing how the above measures will be implemented to reduce glint and glare. If a legitimate complaint is received concerning potential human health and safety hazards relating to glint or glare, the project owner shall notify the CPM within 3 days of receipt of the complaint and shall provide to the CPM within 10 days of the complaint the report detailing how the complaint has been addressed. . In the monthly compliance report, the project owner shall describe any complaints received that month that were determined not to be legitimate and shall explain the basis of that determination. If no legitimate complaints are received and/or if a legitimate complaint is received and the project owner has resolved the source of the complaint(s) within the first 12 months of project operation, project owner can request that the CPM release the project owner from the obligations under Section 4 of this condition after the 12th month of project operations.

C. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This topic reviews the demographic characteristics of population centers near the project site to evaluate the potential impacts of project-induced population increases and the fiscal and physical capacities of local communities to accommodate population increases. The project's economic benefits, including local project-related expenditures, property and sales tax revenues, as well as school impact fees, are also discussed. Additionally, an environmental justice screening analysis is included to determine whether the project will result in disproportionate impacts on minority and/or low-income populations and, if so, whether mitigation is required. The evidence on this topic was undisputed. (Exs. 1, § 5.11; 3; 41; 300, § C.8.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Under CEQA Guidelines, a project may have a significant effect on socioeconomics if it would:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere;
- Cause a substantial change in revenue for local businesses or government agencies; or
- Adversely impact acceptable levels of service for law enforcement, schools, and hospitals. (Ex. 300, p. C.8-2.)

The project site is in a sparsely populated area about 100 miles east of the City of Riverside. According to Staff, the most appropriate study area for evaluating the project's socioeconomic impacts includes the small, local communities nearest the site. These local communities include the City of Blythe, California (approximately 25 miles east of the site) and the Cities of Ehrenburg and Quartsize, Arizona (approximately 30 miles and 45 miles east of the site).

The most recently published population and housing data for these communities are presented below in Staff's **Socioeconomics and Environmental Justice Table 3**. (Ex. 300, p. C.8-4.)

Staff's Socioeconomics and Environmental Justice Table 3
Population and Housing Profile of the Local Study Area

Area	2008 Population	2008 Total Housing Units	2008 Vacancy Rate
Blythe, CA	21,627	5,444	16.1%
Ehrenburg, AZ	1,409	824 [1]	34.9% [1]

Notes: 1 - Data from 2000.
Source: Ex. 1, § 5.11, Tables 5.11-4 and 5.11-5; Ex. 300, p. C.8-.4

The local economic structure in the area near the Palen site is based on tourism, mining, agriculture, and infrastructure since the local communities are closely tied to the Interstate 10 (I-10) travel route between Los Angeles, California and Phoenix, Arizona. The most recently published population and housing data for this I-10 corridor are shown in Staff's **Socioeconomics and Environmental Justice Table 2**, replicated below. There are many housing units located in this region especially in San Bernardino and Riverside Counties; however, La Paz County has the highest vacancy rate. (Ex. 300, p. C.8-3.)

Staff's Socioeconomics and Environmental Justice Table 2
Population and Housing Profile of the Regional Study Area

Population				
Area	**2008**	**2010 Projected**	**2020 Projected**	**2030 Projected**
Riverside County, CA	2,078,601	2,239,053	2,904,848	3,507,498
San Bernardino County, CA	2,055,766	2,177,596	2,582,777	2,957,744
La Paz County, AZ	21,544	22,632	25,487	28,074

Housing		
Area	**2008 Total Housing Units**	**2008 Vacancy Rate**
Riverside County, CA	773,402	13.2%
San Bernardino County, CA	612,801	11.6%
La Paz County, AZ[1]	15,577	42.7%

Notes: 1 - Data from 2007.
Source: Ex. 1, § 5.11, Tables 5.11-4 and 5.11-5; Ex. 300, pp. C.8-3 and C.8-4

1. Impacts

Construction of Palen Solar will take place over a 39-month period. (Ex. 300, p. C.8-6.)

Over the 39-month construction period, an average of approximately 566 daily construction workers with a peak workforce of 1,145 workers will be required depending on the month and phase of development. (Ex. 300, p. C.8-7; Ex. 1, § 5.11.3.2, Table 5.11-17.)

The evidence presumes the workforce will mostly come from the Riverside/San Bernardino/Ontario Metropolitan Statistical Area (MSA), which includes both Riverside and San Bernardino Counties. Since local workforce data were not available for nearby La Paz and Maricopa Counties in Arizona, data for the entire State of Arizona were reviewed because these counties represent the largest population centers in Arizona. According to the record, there is sufficient local availability of a construction workforce within the Riverside/San Bernardino/Ontario MSA and in Arizona to serve the project's direct construction labor needs. (Ex. 300, pp. C.8-7 to C.8-8, Socioeconomics and Environmental Justice Table 4; Ex. 1, § 5.11, Tables 5.11-6a, 5.11-6b, 5.11-6c, 5.11-7.)

The evidence shows that construction workers tend to commute daily from their homes within a two-hour commuting distance.[1] The project's peak requirement of 1,145 construction workers represents less than one percent of the total available construction workforce within the regional MSA. Assuming that the majority of workers will commute up to two hours to the site, it is expected that no permanent in-migration will occur as a result of project-related construction activities. Therefore, there is no evidence that project construction will result in significant impacts to existing population levels or employment distribution within the study area. (Ex. 300, p. C.8-8.)

During the construction period, it is possible that some construction workers will temporarily relocate to the project area and stay in local hotels, motels, or other rental properties during the workweek but return to their homes on weekends. To evaluate potential impacts on housing, Staff assumed that 15 percent of the project's construction workers (worst-case of 172 workers during peak

[1] According to Staff, the Building and Trades Council of San Bernardino and Riverside Counties confirmed that construction workers within San Bernardino and Riverside counties regularly commute two hours each direction daily for work. (Ex. 300, p. C.8-8.)

construction) could potentially seek local lodging in the study area based on temporary and fluctuating need. (Ex. 300, p. C.8-8.)

The record indicates there is an adequate supply of hotels/motels and rental properties in Blythe, Indio, Palm Desert, Indian Wells, Rancho Mirage and other communities located one to two hours from the project site to accommodate weekly commuters and/or temporary residents. In addition, the data indicate that over 1,500 housing units are available in nearby Blythe, Ehrenburg and Quartzsite. There are also several Recreational Vehicle (RV) parks near Blythe with a combined total of about 800 spaces. Therefore, given the availability of short-term housing in the local study area, the maximum temporary peak housing demand of 172 workers will not likely induce substantial population growth or concentration in the local study area nor encourage workers and their families to permanently relocate to the area. (Exs. 300, pp. C.8–8 to C.8–9; 1, § 5.11.3., Table 5.11-5.)

Applicant expects to hire about 134 permanent, full-time employees for project operation. Most of the permanent employees will be hired within the regional Riverside/San Bernardino/Ontario MSA and commute daily to the site. In a worst-case scenario, the parties assumed that 25 percent of the permanent employees could potentially seek housing in local communities closer to the site. Evidence shows that there is an abundance of local housing units available to accommodate employees who may relocate to the area. We therefore find that the addition of permanent Palen Solar employees to either the local or regional area would not permanently induce substantial growth or concentration of population in excess of available housing or forecasted growth. (Exs. 1, § 5.11.3.3; 300, pp. C.8-10 - C.8-11.)

Since project-induced population increases will be minimal, there is no evidence that construction and operation of the project will result in significant adverse impacts on schools, parks and recreation, public utilities, law enforcement, or emergency services in the local communities.[2] (Ex. 300, pp. C.8-11 - C.8-17.)

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[2] In the event of an on-site emergency during project construction, both private ambulance service and Riverside County Fire Department firefighters are expected to provide first responder emergency medical care. However, as discussed In the **Worker Safety and Fire Protection** section, the unmitigated project would result in significant impacts to fire protection services unless a new fire station is built in the site vicinity. Condition **Worker Safety-7** requires the project owner to provide funding for a new fire station, which would be available to serve emergency medical needs during project operations. We find therefore that the project will not significantly impact existing service levels, response times, or capacities of the hospitals serving the local study area. (Ex. 300, pp. C.8-16 - C.8-17.)

2. Section 25523(h) Public Benefit Findings

The project's direct and indirect fiscal benefits, based on property value, payroll, local purchases of equipment, supplies, and associated expenses, are described in Section 5.11 of Exhibit 1, at pages 5.11-29 to 5.11-31, and are summarized in Staff's **Socioeconomics and Environmental Justice Table 10**, below.

Staff's Socioeconomics and Environmental Justice Table 10
Palen Solar Economic Benefits (2009 dollars)

Fiscal Benefits	
Estimated annual property taxes	$200,000[1]
State and local sales taxes: Construction	$805,000
State and local sales taxes: Operation	$437,500
School Impact Fee	$0
Non-Fiscal Benefits	
Construction materials and supplies	$30.0 million
Operations and maintenance supplies	$5.0 million
Direct, Indirect, and Induced Benefits	
Estimated Direct Employment	
Construction	566 jobs (annual full-time equivalent over full 39-month construction phase)
Income	$218.7 million (total over full 39-month construction phase)
Operation	134 jobs
Income	$5.8 million (annual)
Estimated Indirect Employment	
Construction	291 jobs
Income	$14.0 million
Operation	40 jobs
Income	$3.0 million
Estimated Induced Employment	
Construction	196 jobs
Income	$13.0 million
Operation	37 jobs
Income	$2.0 million

Notes: 1 - At present, there is no property tax assessed on solar components (mirrors, solar boiler, heat exchangers) improvements by law (Section 73 of the California Taxation and Revenue Code). Components included under the exemption include storage devices, power conditioning equipment, transfer equipment, and parts. The first operational year and subsequently thereafter would generate an estimated $200,000 in annual property taxes.

Source: Ex. 300, pp. C.8-43 - C.8-44.

Section 17620 of the California Education Code allows school districts to levy school development fees for new commercial or industrial construction within their boundaries. (See also Govt. Code, §§ 65996-65997.) The Palen site is served by the Palo Verde Unified School and Desert Center School Districts. The evidence indicates, however, that all industrial facilities at the site that could trigger application of the fee will be constructed entirely on federal BLM lands. According to Staff, federal lands are exempt from school district levies and since there are no private lands affected, the provisions of Education Code Section 17620 do not apply in this case. (Ex. 300, pp. C.8-13 - C.8-14.)

3. Environmental Justice Screening Analysis

California law defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." [Govt. Code § 65040.12(e); Pub. Res. Code, § 71116(j).]

Federal Executive Order 12898 (1994), "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*," requires state and federal agencies to incorporate environmental justice concerns in their environmental analyses. The USEPA's *Draft Revised Guidance for Investigating Title VI Administrative Complaints Challenging Permits* (USEPA, Aug. 3000) calls for a two-step analysis: (1) does the potentially affected community include minority and/or low-income populations and, if it does, (2) are the environmental impacts likely to fall disproportionately on minority and/or low-income members of the community. See also, *Title VI Public Involvement Guidance for EPA Assistance Recipients Administering Environmental Permitting Programs*, 71 Fed. Reg. 14207 et seq. (USEPA, Mar. 21, 3006). (Ex. 300, pp. C.8-4 - C.8-5.)

According to the USEPA's *Guidance*, an environmental justice population exists if the minority and/or low-income populations of the affected area constitute 50 percent or more of the general population or if the minority population percentage in the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. (Ex. 1, § 5.11.3.4.)

In considering environmental justice in power plant siting cases, we use a demographic screening analysis to determine whether a low-income and/or minority population exists within a six-mile radius of the site, which is consistent

with air quality modeling of the range of a project's air quality impacts. (Exs. 300, p. C.8-5; 1, § 5.11.3.4.)

The evidence shows that the total population within a six-mile radius of the site is 17 persons, and the total minority population is 10 persons or 58.8 percent of the total population. The below poverty-level population reported in the 2000 U.S. Census block group data was 1,440 persons, and the total low-income population was 407 persons or 28.3 percent of the total population within a six-mile radius of the site. [3]

Since the demographic screening area as a whole exceeds 50.0 percent minority and/or low-income populations, environmental justice concerns were considered in the technical topics that have the potential to result in environmental justice impacts, including Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management.

We have found that the project will not cause a significant adverse direct, indirect, or cumulative impact on population, housing, or public services. It follows that, because there would be no adverse project-related socioeconomic impacts, minority and low-income populations would not be disproportionately impacted. (Ex. 300, p. C.8-44.)

4. Cumulative Impacts

Cumulative socioeconomics impacts may occur when overlapping construction schedules for several projects in the same vicinity create a demand for workers that cannot be met by the local labor force, resulting in an influx of non-local workers and their dependents. Operational cumulative socioeconomic impacts may occur when the development of multiple projects significantly impacts the population of an area, resulting in a housing shortage, change in local employment conditions, and an increased demand on public services.
(Ex. 300, p. C.8-35.)

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[3] To accurately map the affected population, it should typically include only US census blocks that contain over 50 percent of the blocks' geographic area within a six-mile radius of a site. However, the census blocks surrounding this site were extremely large and captured populations that extended well beyond the six-mile radius. The same census blocks used to determine minority population would have only counted zero persons in the low-income population category. Therefore, the census data used to determine low-income population included all census blocks intersected by the six-mile radius, even if over 50 percent of the blocks' geographic area was contained within the block. (Ex. 300, p. C.8-6.)

a. Construction

Foreseeable development in the project area includes primarily renewable energy electrical generation and transmission infrastructure projects. With the large number of renewable energy projects occurring within the project regional study area, it is possible that some overlap of construction phasing could occur between the project and the cumulative development projects. Staff's **Socioeconomics and Environmental Justice Table 8**, reproduced below, presents the most recently published data (Year 2006-2016 projections) on labor force characteristics for the cumulative regional study area pertaining to electrical energy construction labor skill sets and compares those to major cumulative projects located near the project along the I-10 corridor, including the Palen Solar Power Project, Genesis Solar Energy Project, Rice Solar Energy Project, and the Desert Sunlight PV Project. (Ex. 300, pp. C.8-35 - C.8-39.)

The foreseeable projects identified in **Socioeconomics And Environmental Justice Table 8** are expected to draw on the large regional construction workforce within the Riverside/San Bernardino/Ontario MSA, which represents sufficient regional labor by skill set for all projects within the regional study area. **Socioeconomics and Environmental Justice Table 8** shows that cumulative development of these projects in a worst-case scenario of overlapping peak period construction could result in the influx of 562 construction workers seeking local lodging within the area. However, we find this scenario unlikely due to construction scheduling and the range of peak months shown in **Socioeconomics and Environmental Justice Table 8**. Although the worst-case in-flux of workers could impact the availability of local hotel/motel rooms within the local and regional study areas, a high number of short-term housing units are available within increasing commute distances from the site. Evidence establishes that ample temporary short-term housing is available for workers seeking short-term local lodging. We find therefore that cumulative project construction within the local and regional study areas will not significantly impact population projections or require the need for new or expanded housing within the study areas. We further find that construction of Palen Solar will not contribute to adverse cumulative socioeconomic impacts. (Ex. 300, pp. C.8-34 - C.8-40.)

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 8
Cumulative Project Construction Employment Needs

Trade	PSPP Total # of Workers for Project Construction by Craft – Peak Month (Month 17)	BSPP Total # of Workers for Project Construction by Craft – Peak Month (Month 16)	GSEP Total # of Workers for Project Construction by Craft – Peak Month (Month 16)	RSEP Total # of Workers for Project Construction by Craft – Peak Month (Month 12)	DSPV Total # of Workers for Project Construction by Craft – Peak Month (Months 6-8)	*TOTAL*	Riverside/San Bernardino/ Ontario MSA 2006	Riverside/San Bernardino/ Ontario MSA 2016
Surveyor	12	16	0	0	N/A	*28*	1,420	1,670
Operator	90	94	0	0	N/A	*184*	4,790	5,460
Laborer	185	229	198	52	N/A	*637*	27,930[1]	32,080[1]
Truck Driver	35	28	0	0	N/A	*63*	27,930[1]	32,080[1]
Oiler	4	4	0	0	N/A	*8*	27,930[1]	32,080[1]
Carpenter	100	77	44	50	N/A	*300*	28,850	32,390
Boilermaker	11	9	0	0	N/A	*20*	4,630[2]	5,330[2]
Paving Crew	0	0	0	0	N/A	*0*	630	720
Pipe Fitter	326	290	200	80	N/A	*968*	4,630	5,330
Electrician	150	81	105	56	N/A	*449*	6,740	7,600
Cement Finisher	100	80	4	6	N/A	*197*	4,110	4,690
Ironworker	59	42	70	32	N/A	*246*	19,460	20,800
Millwright	25	18	22	16	N/A	*153*	2,630[3]	2,960[3]
Tradesman	10	8	382[6]	105[7]	N/A	*544*	27,930[1]	32,080[1]
Project Manager	3	2	0	0	N/A	*5*	10,990[4]	12,380[4]
Construction Manager	3	2	0	5	N/A	*10*	4,380	5,110
PM Assistant	4	2	0	0	N/A	*6*	10,990[4]	12,380[4]
Support	4	2	0	0	N/A	*6*	120[5]	130[5]
Support Assistant	4	2	0	0	N/A	*6*	120[5]	130[5]
Engineer	10	7	60	36	N/A	*127*	1,370	1,600
Timekeeper	3	2	0	0	N/A	*5*	10,990[4]	12,380[4]
Administrator	6	5	0	0	N/A	*11*	10,990[4]	12,380[4]
Welder	1	1	0	0	N/A	*2*	3,960	4,640
Total Peak Month	*1,145*	*1,001*	*1,085*	*438*	*622*	*4,291*	--	--
Local Housing Need[10]	*172*	*150*	*163*	*0[11]*	*93*	*578*	--	--

Notes: [1] The "Construction Laborers" category was used; [2] The "Plumbers, Pipefitters, and Steamfitters" category was used; [3] The "Machinists" category was used; [4] The "Supervisors, Construction and Extraction Workers" category was used; [5] The "Helpers- Construction Trades" category was used; [6] Includes: insulators, painters, teamsters, and 'Solar Field Craft". The solar field craft workers include an estimated five solar field installation crews, with each crew including a Foreman, Equipment Operators, Laborers, Electricians, Ironworkers, Carpenters, Masons, and Pipefitter/Welders; [7] Includes Teamsters, Heliostat Assembly Craft, Construction Staff, Subcontractors, and Technical Advisors; [8] Includes Insulators; [9] Includes Painters, Sheetmetal Workers, and Teamsters; [10] Assumes 15% of peak month workforce may seek temporary local housing during workweek; [11] On-site worker camp is provided for RSEP, providing housing for up to 300 trailers, eliminating local housing need; N/A: labor by craft data not available from BLM.
Source: Ex. 300, p. C.8-37.

In addition, the project's short-term construction-related spending activities will result in cumulative economic benefits for the local and regional study areas. The cumulative benefits will increase when tax revenues and spending related to project construction and operation are combined with spending, and local revenues accrued from other reasonably foreseeable development projects. See **Socioeconomics and Environmental Justice Table 10**, above. (Ex. 300, pp. C.8-39 - C.8-40.)

b. Operation

These cumulative foreseeable projects could potentially result in a total of 138 workers permanently relocating to the local study area. The evidence shows that operation of Palen Solar could potentially result in the relocation of 34 permanent employees into the local study area. Sufficient permanent housing units are available to all operational employees who may relocate locally to work at the cumulative development projects. Therefore, Palen Solar is not expected to contribute cumulatively to an increased demand for new housing in the area. (Ex. 300, p. C.8-40.)

c. Decommissioning

Based on the cumulative impact analysis for project construction activities, it is likely the potential impacts due to decommissioning of the project would not contribute to cumulative socioeconomics impacts because it is reasonable to assume the closure and decommissioning workforce would be drawn from the same regional and local study areas. However, impacts to future existing population levels, housing, or public services would be speculative because decommissioning activities will not likely occur for at least 30 years in the future. (Ex. 300, p. C.8-40.)

5. Alternatives

The record discusses potential socioeconomics impacts under Reconfigured Alternatives #1, #2, and #3, the Reduced Acreage Alternative, and the No Project Alternative. None of the alternatives would result in significant socioeconomics impacts. (Ex. 300, pp. C.8-18 to C.8-32.)

FINDINGS OF FACT

Based on the uncontroverted evidence of record, we make the following findings:

1. A large labor pool residing in the Riverside/San Bernardino/Ontario Metropolitan Statistical Area (MSA) is available within a two-hour commuting distance for construction and operation of the project.

2. Over the 39-month construction period, an average of approximately 566 daily construction workers, with a peak daily workforce of 1,145, will be required depending on the month and phase of development.

3. The project will hire about 134 permanent, full-time employees from the Riverside/San Bernardino/Ontario MSA for project operations.

4. The project will not cause an influx of a significant number of construction or operation workers to permanently relocate to the local area.

5. There is an adequate supply of hotels/motels and rental properties within the project vicinity to accommodate workers who stay in the area temporarily during the week and commute to their homes on the weekend.

6. The project will not result in significant adverse effects on local employment, housing, schools, public utilities, parks and recreation, law enforcement, or emergency services.

7. The anticipated construction payrolls, the local purchases of materials and supplies, and the sales tax revenues generated by the expenditures will have a beneficial effect on the local and regional economy.

8. The anticipated annual operations payroll, annual local capital expenditures and materials, and indirect economic effects will have a beneficial effect on the local and regional economy.

9. The project will generate property tax revenues of approximately $200,000 (2009 dollars) per year.

10. The project is exempt from paying the statutory school development fee because the industrial construction that would be subject to the fee is located on federal property.

11. The project will provide direct, indirect, and induced economic benefits to Riverside County and surrounding communities.

12. The project will not create disproportionate impacts on minority and/or low-income populations because the mitigated project does not result in any

significant health or environmental impacts to any population in the project vicinity.

13. Construction and operation of the project will not result in any direct, indirect, or cumulative significant adverse socioeconomic impacts.

CONCLUSIONS OF LAW

1. We therefore conclude that implementation of all Conditions of Certification in this Decision ensures that the project will comply with all applicable laws, ordinances, regulations, and standards relating to socioeconomic factors as identified in the pertinent portions of **Appendix A**.

2. The evidence of record contains an adequate analysis of socioeconomic effects related to the project and establishes that the project will not create any significant adverse socioeconomic effects as defined under the National Environmental Policy Act or the California Environmental Quality Act.

3. The evidence of record contains an adequate analysis of potential socioeconomic effects in accordance with federal and state guidelines on environmental justice and establishes that the project will not create any disproportionate adverse effects on minority or low-income populations.

4. No Conditions of Certification/mitigation measures are required as all potential socioeconomic impacts associated with Palen Solar and alternatives would be less than significant.

D. NOISE AND VIBRATION

The construction and operation of any power plant will create noise. The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the project to sensitive receptors combine to determine whether project noise will cause significant adverse impacts. In some cases, vibration may be produced as a result of construction activities such as blasting or pile driving; these activities have the potential to cause structural damage and annoyance. (Ex. 300, p. C.7-1.) The evidence of record is summarized below and evaluates whether noise and vibration produced during project construction and operation will be mitigated sufficiently to comply with applicable law and avoid the creation of significant adverse impacts. (10/13/2010 RT: 3-4, 7-10; Exs. 1, § 5.8; 27; 57; 300, § C.7.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Palen Solar Power Project will be constructed in a remote, largely undeveloped area of Riverside County. Ambient noise in the vicinity consists primarily of highway traffic from Interstate 10 (I-10). The nearest sensitive receptors are single residences about 25 feet and 3,500 feet from the project's northwest boundary, but over one mile from the nearest power block. The site is about 10 miles east of the community of Desert Center. (Ex. 300, p. C.7-5.)

Federal and State laws regulate worker noise exposure. (Ex. 300, p. C.7-3.) The Noise Element of Riverside County's General Plan and the County's Noise Ordinance set property line sound level limits for sensitive receptors. (Ex. 300, p. C.7-4.) For residential land uses, the Noise Element of the General Plan categorizes noise levels of up to a 60 dBA day/night average (Ldn) or CNEL as "normally acceptable" and up to 70 dBA Ldn or CNEL as "conditionally acceptable."

The Noise Ordinance allows for different levels of acceptable noise depending upon land use. Section 4 of Ordinance No. 847 (Regulating Noise) limits noise on any property that causes the exterior noise level on any other occupied property to reach 55 dBA during the daytime hours and 45 dBA during the nighttime hours. This applies to noise-sensitive receptors within a very low density rural area, such as the area surrounding the project site. This Noise Ordinance also limits hours of construction activities to the hours of: 6:00 a.m. to 7:00 p.m., June through September, and 6:00 a.m. to 6:00 p.m., October through May, Mondays through Fridays; and 9:00 a.m. to 5:00 p.m. on Saturdays. (Ex. 300, p. C. 7-4.)

CEQA Guidelines set forth characteristics of noise impacts that may indicate potentially significant effects from project-related noise, such as "a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project." (Cal. Code Regs., tit. 14, § 15000 et seq., Appen. G, Section XI.) In accordance with this standard, the Commission uses the significance threshold of 5 dBA when project-related noise emissions exceed existing ambient noise levels at the nearest sensitive receptor. We believe that an increase in background noise levels of up to 5 dBA in a residential setting is insignificant and that an increase of more than 10 dBA is clearly significant. An increase of between 5 dBA and 10 dBA may be considered adverse, but could be either significant or insignificant depending upon the particular circumstances of a given case. (Ex. 300, pp. C.7-1 to C.7-2.)

Factors considered in determining the significance of an adverse impact as characterized above include: (1) the resulting noise level; (2) the duration and frequency of the noise; (3) the number of people affected; and (4) the land use designation of the affected receptor sites. Noise due to construction activities is usually considered insignificant in terms of CEQA compliance if the construction activity is temporary, the use of heavy equipment and noisy activities is limited to day-time hours, and industry-standard abatement measures are employed. (Ex. 300, p. C.7-2.)

The evidence consists, in part, of an ambient noise survey conducted by Applicant on May 18 to May 19, 2009. This survey monitored existing noise levels at the nearest sensitive receptors:

1. Location LT1: closest residence to the project site. This is a residence located approximately 25 feet from the northwest corner of the project right-of-way boundary, but over one mile from the nearest power block. A location near this residence was monitored continuously between 6:51 p.m., May 18, and 7:51 p.m., May 19, 2009.

2. Location LT2: the second closest residence to the project site. This is a residence located approximately 3,500 feet northwest of the site boundary and well over a mile from the nearest power block. A location near this residence was monitored continuously between 6:51 p.m., May 18, and 7:51 p.m., May 19, 2009. (Ex. 300, p. C. 7-5.)

The existing measured ambient noise levels are shown in Table 1, below.

Noise Table 1
Summary of Measured Ambient Noise Levels

Measurement Sites	Measured Noise Levels, dBA	
	Average During Daytime Hours L_{eq}	Average During Nighttime Hours L_{eq}
LT1, Nearest Residence	43[1]	34[2]
LT2, Second Nearest Residence	43[1]	34[2]

Source: Ex. 300, p. C.7-6.
1 - Staff calculations of average of the daytime hours
2 - Staff calculations of average of the nighttime hours

The evidence further shows the effects the project's short-term construction activities and its long-term operation will have upon ambient levels.

1. Construction

Construction noise is a temporary event, in this case expected to occur over a period of about 39 months. The Palen Project's construction within a particular area will not last long. This basically means that maximum construction noise will affect a sensitive receptor nearest the construction for a period of only a few months. Construction of related facilities such as the transmission line also proceeds rapidly, thus subjecting nearby receptors to increased noise levels for relatively short periods of time. (Ex. 300, pp. C.7-7 to C. 7-8.) Aggregate construction noise levels and predicted increases are shown on Table 2, below.

Noise Table 2
Predicted Construction Noise Levels

Receptor	Highest Construction Noise Level L_{eq} (dBA)	Measured Existing Ambient, Average Daytime L_{eq} (dBA)	Cumulative, Using Highest Noise Level of 48 dBA	Change
LT1	59	43	59	+16
LT2	46	43	48	+5

Source: Ex. 300, p. C. 7-6.

To ensure construction noise levels will not be disruptive at the nearest receptors, we have adopted Conditions of Certification **NOISE-1, NOISE-2,** and **NOISE-6**. The first two Conditions establish a notification and complaint process to resolve issues arising from any excessive construction noise; Condition **NOISE-6** generally limits construction to the periods specified in the Riverside County Noise Ordinance. (Ex. 300, p. C.7-7.)

Typically, the loudest noise encountered during construction of a project using a steam turbine is caused by steam blows. Steam blows are used to expunge debris from piping and tubing.

High pressure steam blows, if unsilenced, can typically produce noise levels as high as 129 dBA at a distance of 50 feet; this would amount to roughly 88 dBA at LT1 and 84 at LT2. Unsilenced steam blows could be disturbing at the nearest noise-sensitive receptors, depending on the frequency, duration, and noise intensity of venting. With a silencer installed on the steam blow piping, noise levels are commonly attenuated to 89 dBA at 50 feet. A quieter steam blow process, referred to as *low pressure steam blow* and marketed under names such as QuietBlow™ or Silentsteam™, has become popular. This method utilizes lower pressure steam over a continuous period of about 36 hours. Resulting noise levels reach about 86 dBA at 50 feet.

Condition **NOISE-7** is designed to ensure that steam blows cause the least annoyance possible.

To protect construction workers from injury due to excessive noise, Condition **NOISE-3** requires the project owner to implement a noise control program consistent with OSHA and Cal/OSHA requirements. (Ex. 300, pp. C.7-8 to C.7-9.) Overall, the evidence establishes that construction noise impacts at affected receptors will be less than significant. (Exs. 300, pp. C.7-7 to C.7-9, C.7-12.) Moreover, there is no indication in the evidence of record that vibration from construction activities will be perceptible at any appreciable distance from the project site, or that it will cause any impact. (Ex. 300, p. C.7-8.)

2. Operations

The noise emanating from a power plant is unique. It is generally broadband, steady state in nature. This noise contributes to, and becomes part of, the background noise level when most intermittent noises cease. The project's primary new noise sources include the two power blocks where the steam turbine

generators, air-cooled condensers, electric transformers, and various pumps and fans are located. (Ex. 300, p. C.7-9.) The evidence establishes that daytime operational noise levels are predicted to be 42 dBA Leq at the nearest sensitive receptor. (*Id*.) This complies with the limit established by Riverside County and would result in only inaudible (+3 dBA) daytime increases above the ambient level. Operations would not result in any increase at the other sensitive receptor. (Ex. 300, p. C.7-10.)

The evidence also establishes that strong tonal noises could be a source of annoyance. Condition **NOISE-4** ensures that tonal noises will not cause annoyances. (Exs. 27; 300, p. C. 7-11.) As with construction activities, operational and maintenance activities will meet OSHA and Cal/OSHA standards to protect workers. (Condition of Certification **NOISE-5**; Ex. 300, p. C.7-11.) The evidence also establishes that operational vibration – whether ground borne or air borne – will be undetectable by potential receptors. (Ex. 300, p. C.7-11.)

There are no existing or foreseeable projects close to the Palen Project which could create cumulative noise impacts. (Ex. 300, pp. C. 7-17 to C. 7-18.) The analysis of record does, however, address the impacts of the Reduced Acreage, Reconfigured #1, Reconfigured #2, Reconfigured #3, and various No Project Alternatives in regard to this topic area. None of the Alternatives would substantially alter the level of noise impacts posed by the project. The Palen Project does not create significant adverse impacts in this topic area. Therefore, it is not necessary to consider any of the project's Alternatives as a means of lessening the project's noise impacts to below a level of significance. (Ex. 300, pp. C.7-12 to C.7-17.)

FINDINGS OF FACT

Based on the evidence of record, we make the following findings.

1. The nearest sensitive noise receptors are individual residences located about 25 feet and 3,500 feet (LT 1 and LT 2, respectively) from the project's northwest border.

2. Operation of the Palen Project will not significantly increase noise levels above existing ambient levels at the nearest receptors.

3. Construction noise levels are temporary and transitory in nature and will be mitigated to the extent feasible by sound reduction devices, limiting construction to day-time hours, and providing a notice and complaint process to the public.

4. Project construction will increase noise levels at the nearest sensitive receptors. The evidence establishes that these increases will be temporary and not significant.

5. Mitigation as identified in the evidence of record, and adherence to Conditions of Certification **NOISE-6** and **NOISE-7**, assure that noise from construction activities is reduced to below a level of significance.

6. The project owner will implement measures to protect workers from injury due to excessive noise levels during both construction and operation.

7. The Palen Project will not create ground or air borne vibrations which will cause significant off-site impacts.

8. Implementation of the Conditions of Certification, below, ensure that project-related noise emissions will not cause significant adverse impacts to the closest noise receptors.

9. The noise from the Palen Project will not create a significant adverse cumulative impact.

10. The record addresses the impacts of the Reduced Acreage, Reconfigured #1, Reconfigured #2, Reconfigured #3, and various No Project Alternatives in regard to this topic area.

11. None of the Alternatives mentioned above would result in an increased construction or operational noise level at the nearest sensitive receptors.

12. Implementation of any of the Alternatives mentioned above is not necessary or preferable as a means of reducing project related noise impacts to below a level of significance.

CONCLUSIONS OF LAW

1. The Commission concludes that implementation of the following Conditions of Certification ensure that the Palen Solar Power Project will comply with the applicable laws, ordinances, regulations, and standards on noise and vibration as set forth in the pertinent portion of **Appendix A** of this Decision.

2. The project will not cause significant indirect, direct, or cumulative adverse noise impacts.

CONDITIONS OF CERTIFICATION

Public Notification Process

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one mile of the project site and the linear facilities, by mail or by 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. If the telephone is not staffed 24 hours a 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 where it is 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. This communication shall also verify that the telephone number has been established and posted at the site, and shall provide that telephone number.

Noise Complaint Process

NOISE-2 Throughout the construction and operation of the 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 (below), 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 in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CPM that documents the resolution of the complaint. If mitigation is required to resolve the complaint and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.

Employee Noise Control Program

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance to the applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM. The project owner shall make the program available to Cal-OSHA upon request.

Noise Restrictions

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone, during the daytime hours of 7 a.m. to 10 p.m., to exceed an average of 48 dBA L_{eq} measured at or near monitoring location LT1.

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

A. When the project first achieves a sustained output of 85 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location LT1, or at a closer location acceptable to the CPM. This survey shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

   The measurement of power plant noise for the purposes of demonstrating compliance with this Condition of Certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor site exceeds the above value during the above time period, mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 30 days of the project first achieving a sustained output of 85 percent or greater of rated capacity. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

Occupational Noise Survey

NOISE-5 Following the project's attainment of a sustained output of 85 percent or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any 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 (Article 105) 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 mitigation measures to be employed in order 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.

Construction Restrictions

NOISE-6 Heavy equipment operation and noisy construction work relating to any project features within one-quarter of a mile of an existing residence shall be restricted to the times delineated below, unless a special permit has been issued by the County of Riverside:

Mondays through Fridays:

June through September:	6 a.m. to 7 p.m.
October through May:	6 a.m. to 6 p.m.
Saturdays:	9 a.m. to 5 p.m.
Sundays and Federal holidays:	No Construction Allowed

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. 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.

NOISE-7 If a traditional high-pressure steam blow process is used, the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 89 dBA measured at a distance of 100 feet. The steam blows shall be conducted between 8:00 a.m. and 5:00 p.m. unless arranged with the CPM such that off-site impacts will not cause annoyance to receptors. If a low-pressure continuous steam blow process is used, the project owner shall submit to the CPM a description of the process, with expected noise levels and planned hours of steam blow operation.

Verification: At least 15 days prior to the first steam blow, the project owner shall notify all residents or business owners within one mile of the project site boundary. The notification may be in the form of letters, phone calls, fliers, or other effective means as approved by the CPM. The notification shall include a description of the purpose and nature of the steam blow(s), the planned schedule, expected sound levels, and explanation that it is a one-time activity and not part of normal plant operation.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Palen Solar Power Project (09-AFC-7)
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).

E. VISUAL RESOURCES

Visual resources are the features of the landscape that contribute to the visual character or quality of the environment. CEQA requires an examination of a project's visual impacts in order to determine whether the project has the potential to cause substantial degradation to the existing visual character of the site and its surroundings, substantially affect a scenic vista or damage scenic resources, or create a new source of substantial light or glare affecting day or nighttime views in the area. (Cal. Code Regs., tit. 14 § 15382, Appen. G.)

This section determines that (1) the Palen Solar Power Plant Project (PSPP) would cause such impacts, (2) some of these significant adverse effects on the environment will, with implementation of the adopted Conditions of Certification, be avoided or reduced to insignificance, and (3) that the remaining, immitigable impacts will have to be "overridden" if we are to approve the project.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The PSPP is located in the region between the high elevation Mojave Desert to the north and the arid, lower elevation Sonoran Desert to the south and east. The project site is just north of I-10 in Chuckwalla Valley, approximately 9 miles east of Desert Center in eastern Riverside County. The Chuckwalla Valley is a broad, flat desert plain that includes scattered dry lakes and rolling sand dunes and is bordered by a number of rugged mountain ranges including the Eagle Mountains to the west and north, the Coxcomb and Granite Mountains to the north, the Palen Mountains to the northeast and the Chuckwalla Mountains to the south. (Ex. 301, p. C.12-6.)

There are a number of sensitive land uses and protected areas within the expansive viewshed of the site including: to the north – Palen Dry Lake and Sand Dunes Area, Desert Lily Sanctuary Area of Critical Environmental Concern (ACEC), and Joshua Tree Wilderness; to the northeast – Palen McCoy Wilderness; to the east – Palen Dry Lake ACEC and Ford Dry Lake OHV Area; to the south – Chuckwalla Mountains Wilderness; and to the west – Alligator Rock ACEC and Desert Center. This portion of Chuckwalla Valley offers panoramic views of a desert plain landscape that appears relatively visually intact except for the presence of I-10 to the immediate south and two transmission lines. I-10 is the main travel corridor between Southern California and Phoenix, Arizona. (Ex. 301, p. C.12-6.)

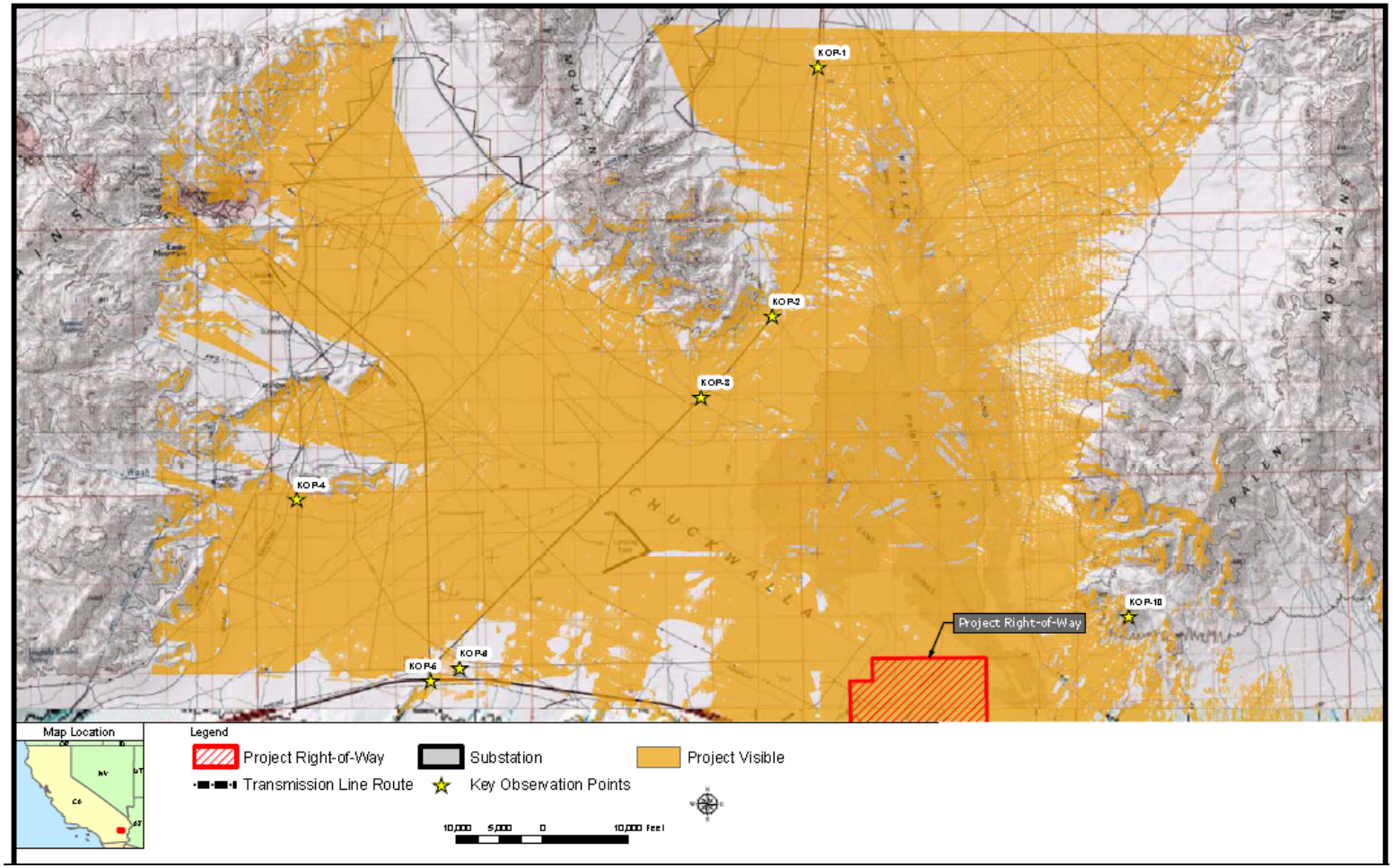
The project site is presently undeveloped and consists mainly of desert scrub, lakebed, and dune landscapes and is predominantly intact on the broad Chuckwalla Valley floor (elevation 150 feet). There are three desert washes, indicated primarily by associated vegetation (desert dry wash woodlands), traversing the site. A wood-pole, H-frame 161-kV transmission line passes through the southwestern corner of the project site and several BLM 4WD roads that provide recreational access to Palen Dry Lake, the Palen Sand Dunes Area, Palen Dry Lake ACEC, and the perimeter of the Palen McCoy Wilderness also cross the site. (Ex. 301, p. C.12-7.)

The natural setting is comprised of sparse, shrubby vegetation of darker greens and tans, low-growing grasses and light-colored soils, rocks and desert pavement openings. Views from the site are panoramic, encompassing the open Chuckwalla Valley and the various mountain ranges that define the valley. The rugged ridges, angular forms and bluish hue of the Palen Mountains to the immediate east of the project site provide a contrast of visual interest to the flat, light-colored horizontal landform of the Chuckwalla Valley floor and project site. The area surrounding the project site is very lightly populated. There are two residences within 3,500 feet of the PSPP northern boundary, one of which reportedly is occupied only seasonally. (Ex. 301, p. C.12-7.)

The *viewshed* or area of potential visual effect (the area within which the project could potentially be seen) is extensive and encompasses much of Chuckwalla Valley and the site facing slopes and ridgelines of the surrounding mountains. A feature of this desert landscape is the potential for large projects to be seen over great distances where elevated viewpoints exist, due to the large open areas of level topography and absence of intervening landscape features. (Ex. 301, p. C.12-7.)

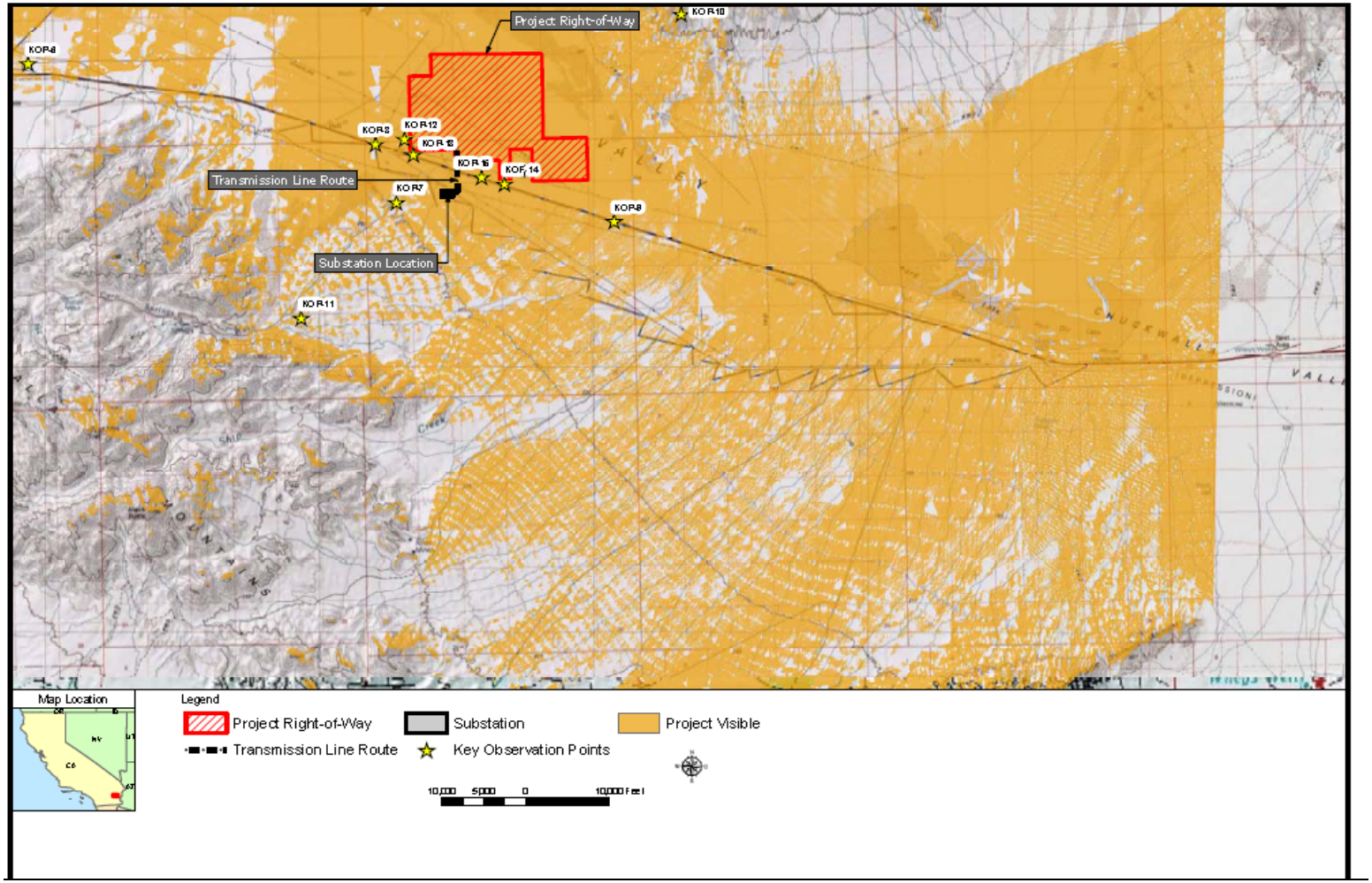
Visual Resources Figure 1
Project Viewshed Map

Palen Solar Power Project - Viewshed Map for PSPP



Visual Resources Figure 2
Project Viewshed Map

Palen Solar Power Project - Viewshed Map for PSPP



1. Project Features

The PSPP would convert over 4.5 square miles of naturally-appearing desert plain to an industrial facility characterized by complex, geometric forms and lines and industrial surfaces that are dissimilar to the surrounding natural landscape character. Much of the developed area would be covered with the arrays of parabolic mirrors that would be used to collect heat energy from the sun. **Visual Resources Table 1** provides a list of the major project features that would contribute to the apparent visual change of the landscape. In addition to the features listed in **Visual Resources Table 1** below, the project would also include the installation of chain link fencing and desert tortoise fencing around the perimeter of the site for security and protection of sensitive biological resources. Additionally, a 30-foot high wind fence would be installed along the western and eastern borders of the individual development. (Ex. 301, pp. C.12-13 - C.12-14.)

VISUAL RESOURCES Table 1
KEY PROJECT COMPONENTS

Component	Dimensions (LxWxH) (Feet) / Capacity	Footprint (square feet)
Switch Yard	13 x 92	1,200
Overflow Vessel And Expansion Vessel	124 x 154	19,000 Ea
Ullage Coolers And Vessel	79 x 20	1,000
Nitrogen System	Incidental	800
Heat Transfer Fluid Heater	50 x 22 x 80 Stack	1,100
Steam Generators	90 x 10 x 24 Ea	900
Weather Station Building	68 x 68 x 24 (Two Level Bldg)	4,600
Parking	18 x 60	1,080
Balance Of Plant Electrical Building	67 x 67 x 24 (Two Level Bldg)	4,500
Reheaters	32 x 10 Ea	320
MCC Cooling Tower	33 x 40 x 32 High	1,320
Steam Turbine	111 x 50 x 40 High	5,500
Deaerator	125 x 57	7,100
Vacuum System	19 x 35 x 24 High	665
Compressed Air System	25 x 25 x 24 High	625
Generator Circuit Breaker	20 x 30 x 20	600
Warehouse	68 x 146 x 30	10,000
Chemical Injection Skid	46 x 47 x 24	2,000
Generator Step-Up Transformers	48 x 32 x 24	1,500
Emergency Diesel Generator	40 x 10 x 20	800
Cooling Tower	33 x 40 x 32 High	1,300
Water Tank (Ro Concentrate) (Ps1 Only)	45 Dia x 24 High / 250,000 Gal	1,590
Service Water Pumps	23' x 12' x 16'	275
Take Off Tower	30' x 35' x 50'	1,000

Component	Dimensions (LxWxH) (Feet) / Capacity	Footprint (square feet)
Blowdown Tanks	28' Dia Ea	570
Auxiliary Boiler	40' x 73' x 32'	2,900
Air Cooled Condenser	245' x 296' 150' High	73,000
Sample Panel & Lab Building	84' x 48' x 24' High	1,100
Demineralized Water Tank	16' Dia x 24' High	200
Water Treatment Area	192 x 148	28,000
Administration Building	60 x 60 x 24 High	3,600
Control Building	68 x 68 x 24 High	3,900
High Voltage Line	4 Dia x 140 High Poles	
Pipe Rack	40 High Misc.	
Treated Water Tank (Also Firewater Storage)	91 Dia x 24 High / 1 Million Gal	6,500
Propane Storage Tank	9' 4-3/4" Dia x 40' 9-3/8" Lng /18,000 Gal	400
Transmission Line	7,000 linear feet	
Wind Fence (East and West)	64,600 linear feet	

(Ex. 301, pp. C.12-14 to C.12-15.)

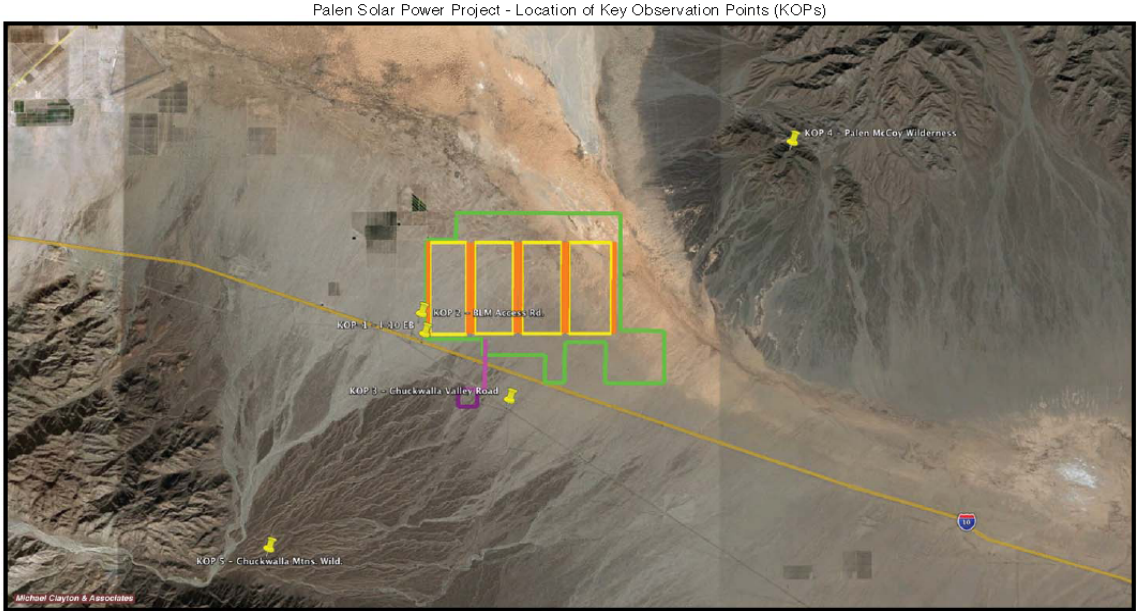
2. Key Observation Points

Key Observation Points (KOPs) represent the most critical locations from which the project will be seen. These reflect, in particular, those key sensitive viewer groups most likely to be affected by the project. Assessments of project visual impact are determined from these KOPs. (Ex. 301, p. C.12-2.)

KOPs are rated from low to high using eight factors: visual quality, viewer concern, visibility, number of viewers, duration of view, contrast, dominance, and view blockage. (Ex. 301, pp. C.12-3 - C.12-4.)

Visual Resources Figure 3
Key Observation Points

Palen Solar Power Project - Location of Key Observation Points (KOPs)



The five KOPs analyzed in the record are shown in relation to the PHPP in **Visual Resources Figure 3**. They are:

- **KOP 1** – Eastbound Interstate 10 (I-10), just east of the Corn Springs Road/I-10 eastbound on-ramp, in the vicinity of coordinates – Latitude: 33° 40' 52.61" N, Longitude: 115° 14' 25.08" W, viewing to the northeast.
- **KOP 2** – BLM Access Road to Palen Dry Lake and Sand Dunes Area, near the southwest corner of the project site in the vicinity of coordinates – Latitude: 33° 41' 11.33" N, Longitude: 115° 14' 28.53" W, viewing to the northeast.
- **KOP 3** – Westbound Chuckwalla Valley Road, approximately 0.58 mile southeast of the transmission line span and approximately 0.6 mile south of Interstate 10, due south of the project site in the vicinity of coordinates – Latitude: 33° 39' 51.78" N, Longitude: 115° 12' 55.56" W, viewing to the northwest.
- **KOP 4** – Palen McCoy Wilderness, approximately 3.5 miles northeast of the project site in the vicinity of coordinates – Latitude: 33° 43' 48.51" N, Longitude: 115° 7' 57.65" W, viewing to the southwest.
- **KOP 5** – Chuckwalla Mountains Wilderness, approximately 5 miles southwest of the project site in the vicinity of coordinates – Latitude: 33° 37' 35.00" N, Longitude: 115° 17' 7.65" W, viewing to the northeast.

(Ex. 301, pp. C.12-7 - C.12-8.)

3. Direct/Indirect Impacts and Mitigation

a. Construction Impacts

Construction of the PSPP will cause temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts will occur at the PSPP site and along the transmission line route. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction will include site clearing and grading, construction of the actual facilities, and site cleanup and restoration. Visible traffic will also increase along I-10 and the BLM recreational access road during construction, and grading activities will generate large dust clouds, which can be visually distracting if not controlled properly. Construction activities will be visible from I-10 (the primary travel corridor in the region), nearby BLM recreational access roads, the few residences in the area, State Route (SR) 177, Palen McCoy Wilderness, and Chuckwalla Mountains Wilderness. (Ex. 301, p. C.12-13.)

Throughout the construction period of approximately 39 months, the industrial character of the activities would constitute adverse and significant visual impacts. The vast majority of the area disturbed by construction would eventually be occupied by project facilities (see *Operation Impacts* below) though some areas of disturbed soil surfaces (characterized by high color, line and texture contrasts) would still remain and would be visible from various vantage points. These areas of residual disturbance would require successful restoration. Proper implementation of restoration mitigation, described in Condition of Certification **VIS-2,** would ensure that the visual impacts of residual disturbed areas associated with project construction will be less than significant. It is also anticipated that some construction activity will take place at night. In order to ensure that significant construction lighting impacts do not occur, we will impose the night lighting mitigation measures contained in Condition of Certification **VIS-3**. (Ex. 301, p. C.12-13.)

b. Operation Impacts and Mitigation

Before considering individual KOPs, we consider generally whether the project as built will substantially affect a scenic vista or damage scenic resources, or create a new source of substantial light or glare affecting day or night time views in the area [Cal. Code Regs., tit. 14, Appen. G, §§ I, subds. (a), (b) and (d)]. A

scenic vista is defined as a distant view of high pictorial quality perceived through and along a corridor or opening. (Ex. 301, p. C.12-21.)

Although no designated scenic vistas were identified in the study area, panoramic and highly scenic vistas are available to backcountry recreationists who access the southern ridges of the Palen McCoy Wilderness and the northeastern ridges of the Chuckwalla Mountains Wilderness. Both areas overlook the expansive Chuckwalla Valley ringed by distinguishable mountain ranges. The evidence indicates that the PSPP will be prominently visible from both wilderness areas and the introduction of industrial character and structural visual contrast will result in substantial adverse effects on these vistas. (Ex. 301, p. C.12-21.)

The Chuckwalla Valley floor consists primarily of desert scrub vegetation. The project site is located adjacent and to the north of I-10, which is not listed as an eligible State Scenic Highway. Furthermore, there are no notable scenic features or historic structures located within the site. Therefore, the project will not substantially damage scenic resources such as trees, rock outcroppings, or historic buildings within view of a state scenic highway. (Ex. 301, p. C.12-21.)

The PSPP will introduce prominent structures with industrial character into the foreground to background views from I-10 (see KOPs 1 and 3), SR 177, BLM recreational access roads (see KOP 2), nearby Wilderness areas (see KOPs 4 and 5), and a few nearby residences. The record shows that the resulting visual change is considered to be moderate-to-high, resulting in a substantial degradation of the existing visual character or quality of the site and its surroundings. (Ex. 301, p. C.12-21.)

The project has the potential to create a new source of substantial light that would adversely affect nighttime views in the area. Specifically, security lighting in the PSPP power block and solar fields would operate approximately 3,600 hours per year during the hours of darkness. However, the record indicates that with effective implementation of Condition of Certification **VIS-3**, night lighting impacts would be mitigated to levels that would be less than significant. (Ex. 301, p. C.12-22.)

Daytime glare from the project poses a problem, not only for aesthetic reasons, but also for safety reasons due to the proximity of Highway I-10. Potentially affected receptors include motorists on I-10, travelers and recreationists on the nearby BLM recreational access roads, visitors to the Palen Dry Lake and Sand

Dunes recreation areas and other ACECs in Chuckwalla Valley, and visitors to the Joshua Tree Wilderness, Palen McCoy Wilderness, and Chuckwalla Mountains Wilderness. Any visible glare or reflected light will draw viewers' attention to the facility, even from distant locations.

Condition of Certification **VIS-1** requires the project owner to treat the surfaces of all project structures and buildings visible to the public, where feasible, so that their colors minimize visual intrusion and contrast by blending in with the existing characteristic landscape colors. Condition of Certification **VIS-1** also requires that these colors and finishes not create excessive glare. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Nevertheless, as noted in the Applicant's response to comment DR-VIS-248, *"It is possible that the back reflected light or light not absorbed by both the envelope and steel annulus of the Heat Collecting Element (HCE) can be seen in the reflection of the parabolic mirror at certain angles above the horizon* [from an elevated perspective such as the Palen Mountains].*"* (Ex. 11). The record also contains examples of visible glint and reflected light at the existing Kramer Junction Solar Electric Generating (SEGS) project. (Ex. 301, p. C.12-22.)

Once the solar troughs are past moving into or out of stow position, they will reflect the sky and a portion of sunlight by diffuse refraction. When moving into or out of stow position, the troughs may produce "bright spots," which are the product of spread reflection of the direct image of the sun. These bright spots can be characterized as "blurry" or "hazy" and move as the observer changes position relative to the sun and mirror, so that the bright spot appears to "follow" the observer. Since the moving bright spot is several orders of brightness greater than the reflected sky and clouds on the mirrors, it may prove to be an especially annoying distraction. (Ex. 301, p. C.12-22.)

We therefore find that the PSPP will have a substantial adverse effect on a scenic vista, degrade the existing visual character of quality of the site and its surroundings, and create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

An analysis of operation impacts was conducted for the view areas represented by the five key viewpoints selected for in-depth visual analysis. The results of the operation impact analysis are discussed below by KOP. For each KOP, an evaluation of visual contrast, project dominance, and view blockage is presented

with a concluding assessment of the overall degree of visual change caused by the proposed project. Visual change is then considered within the context of the landscape's visual sensitivity to arrive at a determination of visual impact significance. (Ex. 301, p. C.12-13.)

KOP 1 – Eastbound Interstate 10

KOP 1 was selected to characterize the visual impact to motorists on I-10, in the immediate vicinity of the proposed project. KOP 1 is located on eastbound I-10, just east of the Corn Springs Road/I-10 eastbound on-ramp. The view is to the northeast and is depicted in **Visual Resources Figure 4**. This location provides an open and unobstructed view of the site. The foreground to middle ground terrain is flat and supports sparse desert scrub vegetation. The existing landscape appears absent any built features and is natural in appearance. The project would be visible in the foreground. To the north and east of the site (background mountains in the image) are the Palen Mountains and Palen McCoy Wilderness. To the north and north-northwest of the site (beyond the frame of the image) are the Granite Mountains and the southern end of the Coxcomb Mountains and Joshua Tree Wilderness. (Ex. 301, p. C.12-8.)

Visual Resources Figure 4
KOP 1 – Eastbound Interstate 10 – Existing View

The record indicates that for KOP-1, existing visual quality is considered moderately low, viewer concern and viewer exposure are high, and visual sensitivity is moderate to high. (Ex. 301, pp. C.12-8 to C.12-9.)

Visual Resources Figure 5 presents a Google Earth perspective of the PSPP site and illustrates the visibility of the project area. The yellow lines in the perspective indicate the locations of development areas at a height of approximately 24 to 25 feet, which is the approximate height of many of the project features. The orange lines indicate the locations of the 30-foot tall wind fences. The shading beneath the lines indicates the portion of the landscape that would essentially be blocked from view. Color assignment in the perspective is not significant and was merely selected to achieve ease of understanding. (Ex. 301, p. C.12-15.)

Visual Resources Figure 5
KOP 1 – Eastbound Interstate 10 – Simulated View

Visual Contrast: The PSPP will add prominent industrial features to the foreground landscape including the geometric forms and complex lines and industrial surfaces of the solar arrays, overflow and expansion vessels, steam turbine, warehouse and support facilities, air cooled condenser, water treatment facilities, fencing and transmission line. Such characteristics are not found in the

existing landscape. The reflection off the parabolic mirrors could also cause visual distraction and exacerbate the contrast associated with the project facilities. The evidence shows that the resulting visual contrast caused by these industrial characteristics will be high. (Ex. 301, p. C.12-15.)

***Project Dominance*:** The PSPP will appear highly prominent given the foreground proximity of the structural features to I-10. The PSPP will also appear comparable in prominence to the broad, horizontal forms of the foreground valley floor and I-10, and the angular forms of the background mountains. The power plant facilities will appear spatially prominent in the primary cone of vision, and the extension of the taller structures above the horizon line will contribute to the project's overall structural prominence. Overall project dominance will be co-dominant-to-dominant. (Ex. 301, p. C.12-15.)

View Blockage: From the vicinity of KOP 1, the solar arrays and other project components will block from view portions of Chuckwalla Valley floor and the background Coxcomb, Granite and Palen Mountains. The resulting view blockage will be moderate. (Ex. 301, p. C.12-15.)

Overall Visual Change: From KOP 1, the values for visual contrast, project dominance, and view blockage, when taken together, constitute a moderate-to-high overall visual change. (Ex. 301, p. C.12-15.)

Visual Impact Significance: When considered within the context of the overall moderate-to-high visual sensitivity of the existing landscape and viewing characteristics, the moderate-to-high visual change that will be perceived from KOP 1 will result in an adverse and significant visual impact. Given the large scale of the impact area, no available mitigation measures were identified that would be sufficient to mitigate the significant visual impacts to levels below significance. However, the following conditions of certification will minimize structure contrast, lighting and glare impacts to the extent possible: **VIS-1**, Surface Color Treatment of Structures; **VIS-2**, Revegetation of Disturbed Soil Areas; **VIS-3**, Temporary and Permanent Exterior Lighting; and **VIS-4,** Project Design. Nevertheless, impacts from KOP 1 will remain significant and unavoidable. (Ex. 301, pp. C.12-15 to C.12-16.)

KOP 2 – BLM Access Road to Palen Dry Lake

KOP 2 was selected to characterize the visual impact to recreationists accessing the various recreational destinations in the immediate project vicinity including

Palen Dry Lake, Palen Sand Dunes Area, Palen Dry Lake ACEC and the Palen McCoy Wilderness. KOP 2 is located on the BLM Access Road to Palen Dry Lake and Sand Dunes Area, near the southwest corner of the project site, just north of the Corn Springs Road I-10 off-ramp. The view is to the northeast and is depicted in **Visual Resources Figure 6.** This location provides an open and unobstructed view of the site that would be experienced by recreationists seeking an off-road and back-country recreational experience. The foreground to middle ground terrain is flat and supports sparse desert scrub vegetation. The existing landscape appears predominantly natural in appearance and is absent any built features except for the rough-hewn vertical wood poles of a 161 kV H-frame transmission line that passes through the southwest corner of the project site (structures are visible in **Figure 6**). Featured prominently in the background are the angular forms of the Palen Mountains. (Ex. 301, p. C.12-9.)

Visual Resources Figure 6
KOP 2 – BLM Access Road to Palen Dry Lake- Existing View

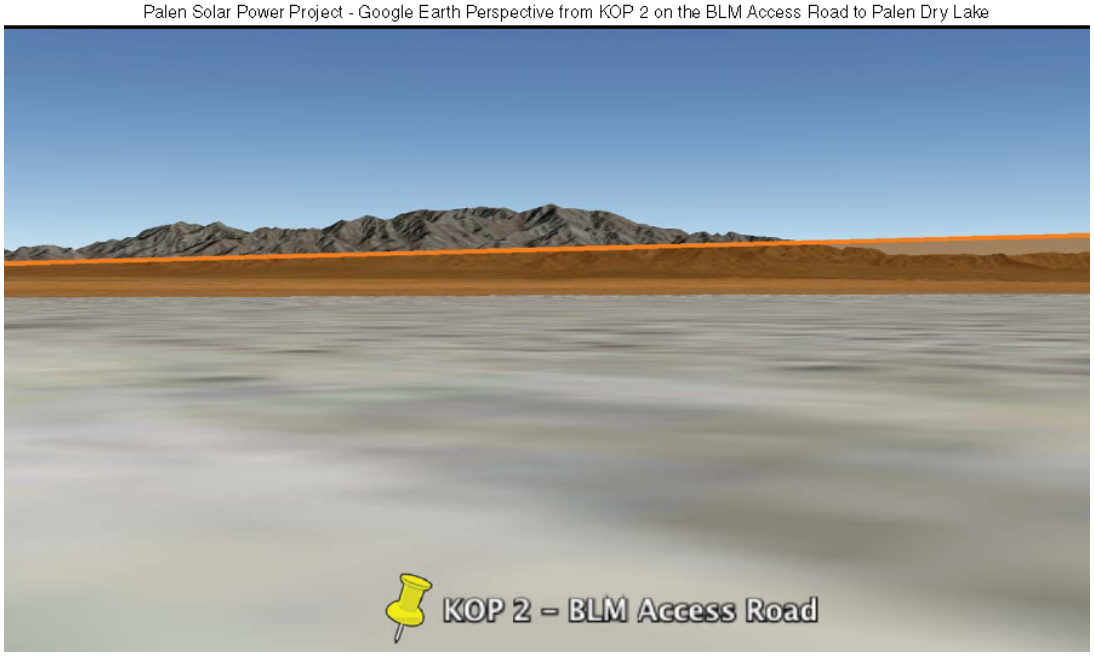
Palen Solar Power Project - Existing View from KOP 2 on the BLM Access Road to Palen Dry Lake

The record indicates that for KOP 2, existing visual quality is considered low to moderate, viewer concern is high, and both viewer exposure and visual sensitivity are considered moderate to high. (Ex. 301, pp. C.12-9 to C.12-10.)

Visual Resources Figure 7 presents a Google Earth perspective of the PSPP site and illustrates the visibility of the project area and the 30-foot tall wind fence in particular. The upper orange line in the perspective indicates the approximate height of the 30-foot high wind fence along the western perimeter of the site. The shading below the line indicates the portion of the landscape that would essentially be blocked from view. (Ex. 301, p. C.12-16.)

Visual Resources Figure 7
KOP 2 – BLM Access Road to Palen Dry Lake- Simulated View

Palen Solar Power Project - Google Earth Perspective from KOP 2 on the BLM Access Road to Palen Dry Lake



Visual Contrast: The PSPP will add the same prominent industrial features to the foreground landscape as described in KOP 1 above. The resulting visual contrast caused by these industrial characteristics will be high. (Ex. 301, p. C.12-16.)

Project Dominance: The PSPP will appear highly prominent given the foreground proximity of the structural features to the BLM recreational access roads, and the angular forms of the background mountains. The extension of the taller structures above the horizon line will contribute to the project's overall structural prominence. The overall project dominance will be co-dominant-to-dominant. (Ex. 301, p. C.12-16.)

View Blockage: From the vicinity of KOP 2, the lower quality landscape features or the project components will block higher quality landscape features from view,

including portions of Chuckwalla Valley floor; the background Granite and Palen Mountains; and sky. The resulting view blockage will be moderate-to-high. (Ex. 301, pp. C.12-16 - C.12-17.)

Overall Visual Change: From KOP 2, the values for visual contrast, project dominance, and view blockage, when taken together, constitute a moderate-to-high level of overall visual change. (Ex. 301, p. C.12-17.)

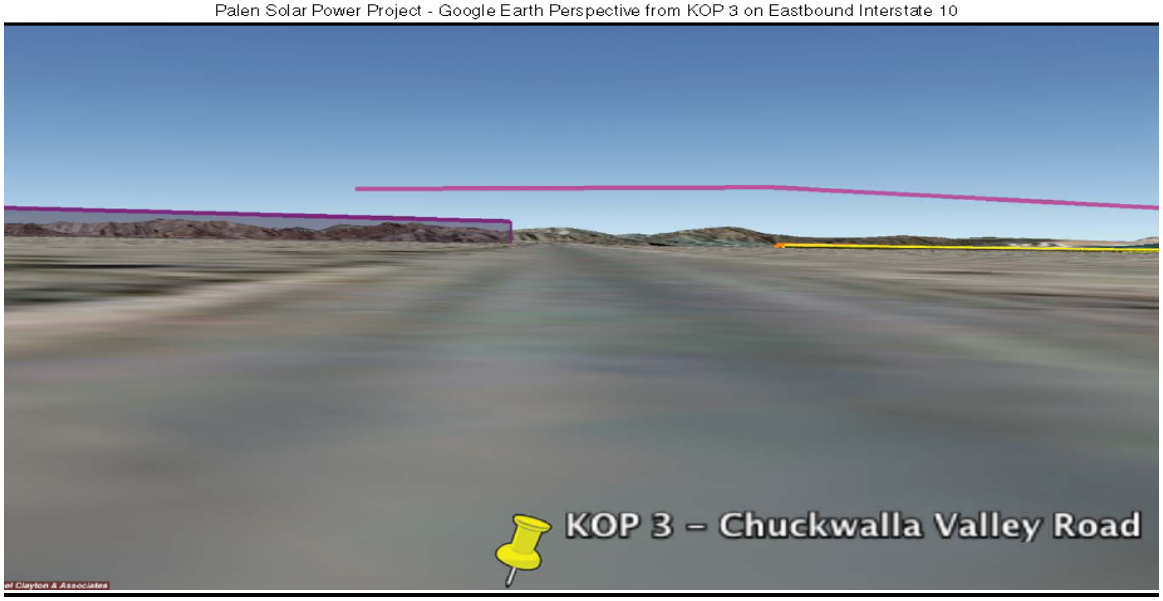
Visual Impact Significance: When considered within the context of the overall moderate-to-high visual sensitivity of the existing landscape and viewing characteristics, the moderate-to-high visual change that would be perceived from KOP 2 would cause an adverse and significant visual impact. Again, no available mitigation measures were identified that would be sufficient to mitigate the significant visual impacts below significant levels. Although Conditions of Certification **VIS-1**, **VIS-2**, **VIS-3**, and **VIS-4** will minimize structure contrast and lighting and glare impacts to the extent possible, impacts will remain significant and unavoidable. (Ex. 301, p. C.12-17.)

KOP 3 – Chuckwalla Valley Road at the Transmission Line

KOP 3 was selected to characterize the visual impact to motorists on Chuckwalla Valley Road, in the immediate vicinity of the transmission line span of Chuckwalla Valley Road, approximately 0.6 mile south of I-10 and approximately 1.3 miles south of the project site. This impact would be similar to that experienced by motorists on I-10. The view is to the northwest toward the span and is depicted in the Google Earth perspective presented as **Visual Resources Figure 8.** This location provides an open and unobstructed view of the transmission line span and the proposed substation that would be located adjacent and to the south of Chuckwalla Valley Road. The transmission line and substation would be prominently visible in the foreground of views from Chuckwalla Valley Road and I-10. The foreground to middle ground landscape is predominantly natural in appearance and consists of sparse desert scrub vegetation. In the background of the westbound view are the Eagle Mountains and the Chuckwalla Mountains further to the south. (Ex. 301, p. C.12-10.)

Visual Resources Figure 8
KOP 3 – Chuckwalla Valley Road at the Transmission Line
Simulated View

Palen Solar Power Project - Google Earth Perspective from KOP 3 on Eastbound Interstate 10



The record indicates that for KOP 3, existing visual quality is considered low to moderate, viewer concern and viewer exposure are both considered high, and visual sensitivity is considered moderate to high. (Ex. 301, pp. C.12-10 to C.12-11.)

Visual Resources Figure 8 presents a Google Earth perspective of the proposed 230 kV transmission line span of Chuckwalla Valley Road and the substation site that would be located adjacent and to the south of Chuckwalla Valley Road. The magenta line in the perspective indicates the approximate route location and an estimated average height of 125 feet for the structures (that would appear as vertical features and not a horizontal line). The transmission line would be a bundled, double-circuit (six conductors and a shield wire) transmission line on steel poles. The conductors would be visible as curvilinear spans (line arcs) between the prominent, vertical steel-pole structures. (Ex. 301, p. C.12-17.)

***Visual Contrast*:** The proposed transmission line and substation will add industrial features with prominent vertical and curvilinear lines (for the transmission line) and structurally complex forms and lines (for the substation) to the foreground landscape. Such characteristics are not visible in the existing landscape and the strong vertical lines of the transmission structures will contrast

with the prevailing horizontal lines of the valley floor and the irregular ridgelines of the mountains beyond. The resulting visual contrast caused by these industrial characteristics and contrasting features will be moderate-to-high. (Ex. 301, p. C.12-17.)

***Project Dominance*:** The PSPP will appear highly prominent given the foreground proximity of the structural features to Chuckwalla Valley Road and I-10. The PSPP will also appear comparable in prominence to the broad, horizontal forms of the foreground valley floor, and the angular forms of the background mountains. The proposed transmission line and substation will appear spatially prominent in the views of both westbound and eastbound motorists, and the extension of the transmission structures and conductors above the horizon line would contribute to the project's overall structural prominence. The overall project dominance would be co-dominant. (Ex. 301, pp. C.12-1-C.12-18.)

View Blockage: From the vicinity of KOP 3 (and along Chuckwalla Valley Road and 1-10), the transmission line and substation will block from view portions of the Chuckwalla Valley floor, the background Eagle, Chuckwalla, Coxcomb, Granite and Palen Mountains, and sky. The resulting view blockage will be moderate-to-high. (Ex. 301, p. C.12-18.)

Overall Visual Change: From KOP 3, the values for visual contrast, project dominance, and view blockage, when taken together, will constitute a moderate-to-high level of overall visual change. (Ex. 301, p. C.12-18.)

***Visual Impact Significance*:** When considered within the context of the overall moderate-to-high visual sensitivity of the existing landscape and viewing characteristics, the moderate-to-high visual change that will be perceived from KOP 3 will result in a significant visual impact. No available mitigation measures were identified that would reduce the visual impact other than burying the line underground. The evidence indicates that installing the line underground is not recommended due to cost. Therefore, even after the implementation of the following Conditions of Certification **VIS-1, VIS-2**, and **VIS-4** to minimize structure contrast to the extent possible, residual impacts will remain significant. (Ex. 301, p. C.12-18.)

KOP 4 – Palen McCoy Wilderness

KOP 4 was selected to characterize the visual impact to recreationists accessing the Palen McCoy Wilderness. KOP 4 is located on a ridge in the southwestern portion of the Wilderness area. **Visual Resources Figure 9** presents an existing view photograph from a nearby location (approximately .22 mile to the south). This location provides an open and unobstructed elevated view of the site that would be experienced by recreationists seeking the backcountry recreational wilderness experience with panoramic views of the Chuckwalla Valley and beyond. The middle ground to background view encompasses the flat valley floor, with the rugged, angular forms of the Chuckwalla Mountains in the background. From this elevated vantage point, the existing landscape appears predominantly natural in appearance and is absent any noticeable built features except for the thin linear form of I-10 that passes through the valley. (Ex. 301, p. C.12-11.)

Visual Resources Figure 9
KOP 4 – Palen McCoy Wilderness – Existing View

Palen Solar Power Project - Existing Conditions from KOP 4 in the Palen McCoy Wilderness

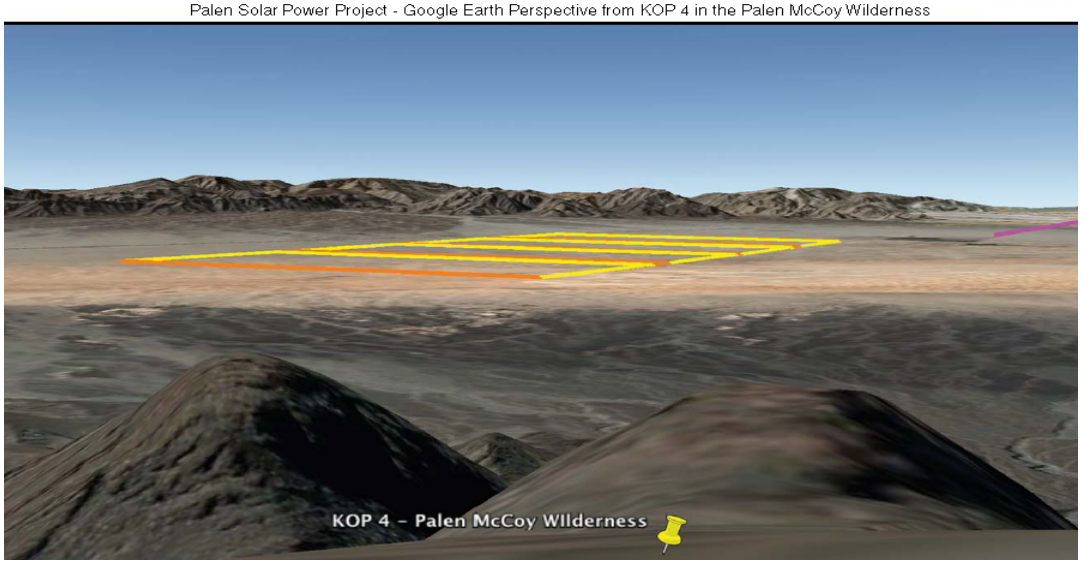
The record indicates that for KOP 4, viewer concern is considered high while existing visual quality, viewer exposure, and visual sensitivity are considered moderate to high. (Ex. 301, p. C.12-11.)

Visual Resources Figure 10 is a Google Earth perspective of the PSPP site and illustrates the visibility of the project area from the elevated perspectives available along the southern ridges of the Palen McCoy Wilderness. The orange lines in the perspective indicate approximate locations for the 30-foot high wind

fence. The yellow lines indicate the approximate boundaries of the various development areas at a height of approximately 24 to 25 feet (a typical height of many of the project components). (Ex. 301, p. C.12-18.)

Visual Resources Figure 10
KOP 4 – Palen McCoy Wilderness – Simulated View

Palen Solar Power Project - Google Earth Perspective from KOP 4 in the Palen McCoy Wilderness



Visual Contrast: The PSPP would convert a substantial portion of the existing, natural-appearing landscape to an industrial facility characterized by geometric forms and complex horizontal and vertical lines and industrial surfaces. Because of the elevated perspective, the entire facility would be visible. The introduced industrial characteristics are not found in the existing landscape. The reflection off the parabolic mirrors may cause visual distraction and exacerbate the contrast associated with the project facilities. The resulting visual contrast caused by these industrial characteristics is high. (Ex. 301, pp. C.12-18 - C.12-19.)

***Project Dominance*:** The PSPP would appear highly prominent given the spatial prominence of the proposed facility within (a) the center of Chuckwalla Valley (north to south) and (b) the center of a primary field of view toward the southwest and the Chuckwalla Mountains across the valley. The PSPP would appear comparable in prominence to the broad, horizontal forms of the valley floor, and the angular forms of the background mountains. The record indicates that overall project dominance would be co-dominant. (Ex. 301, p. C.12-19.)

View Blockage: From the vicinity of KOP 4, the project facility's lower quality landscape features will block from view a substantial and central portion of the

higher quality landscape feature of the Chuckwalla Valley floor. The resulting view blockage will be moderate. (Ex. 301, p. C.12-19.)

Overall Visual Change: From KOP 4, the values for visual contrast, project dominance, and view blockage, when taken together, constitute a moderate-to-high level of overall visual change. (Ex. 301, p. C.12-19.)

Visual Impact Significance: When considered within the context of the overall moderate-to-high visual sensitivity of the existing landscape and viewing characteristics, the moderate-to-high visual change from KOP 4 will cause an adverse and significant visual impact. Again, no available mitigation measures were identified that would be adequate to mitigate the significant visual impacts to levels that would be less than significant. Conditions of certification **VIS-1**, **VIS-2**, **VIS-3**, and **VIS-4**, will minimize structure contrast and lighting and glare impacts to the extent possible, but impacts will remain significant and unavoidable. (Ex. 301, p. C.12-19.)

KOP 5 – Chuckwalla Mountains Wilderness

KOP 5 was selected to characterize the visual impact on views from the Chuckwalla Mountains Wilderness, which although physically accessible, receives limited use. KOP 5 is located in the northern portion of the Wilderness area, approximately five miles southwest of the project site, and just east of Corn Springs Road. **Visual Resources Figure 11** presents an existing view photograph from this general location. This location provides an open and unobstructed view of the site that would be experienced by recreationists seeking the backcountry recreational wilderness experience with panoramic vista views of the Chuckwalla Valley and beyond. The middleground to background view encompasses the flat valley floor, with the rugged, angular forms of the Palen, Granite and Coxcomb Mountains in the background. From this vantage point, the existing landscape appears predominantly natural in appearance and is absent any noticeable built features except for the thin linear form of I-10 that passes through the valley. (Ex. 301, p. C.12-12.)

Visual Resources Figure 11
KOP 5 – Chuckwalla Mountains Wilderness - Existing View

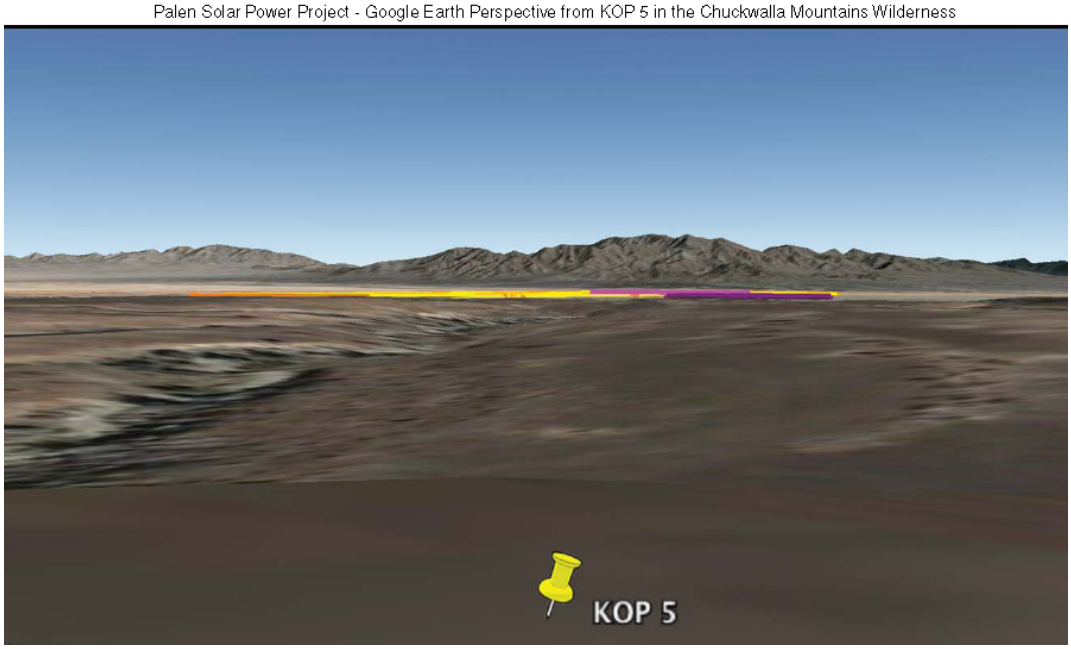
Palen Solar Power Project - View from KOP 5 Looking Northeast toward PSPP Site - Existing Condition

The record indicates that for KOP 5, viewer concern is considered high while, existing visual quality, viewer exposure, and visual sensitivity are considered moderate to high. (Ex. 301, p. C.12-12.)

Visual Resources Figure 12 is a Google Earth perspective of the PSPP site and illustrates the visibility of the project area from the elevated perspectives available along the northern ridges of the Chuckwalla Mountains Wilderness. The orange lines in the perspective indicate approximate locations for the 30-foot high wind fence. The yellow lines indicate the approximate boundaries of the various development areas at a height of approximately 24 to 25 feet (a typical height of many of the project components). The magenta line indicates the route of the 230 kV transmission line. The purple line indicates the location of the substation. (Ex. 301, p. C.12-19.)

Visual Resources Figure 12
KOP 5 – Chuckwalla Mountains Wilderness - Simulated View

Palen Solar Power Project - Google Earth Perspective from KOP 5 in the Chuckwalla Mountains Wilderness



Visual Contrast: As with the other KOPs, the introduced industrial characteristics are not found in the existing landscape and the reflection off the parabolic mirrors may cause visual distraction and exacerbate the contrast associated with the project facilities. The resulting visual contrast caused by these industrial characteristics will be moderate at this viewing distance. (Ex. 301, p. C.12-20.)

Project Dominance: The PSPP would appear prominent given the spatial prominence of the proposed facility within (a) the center of Chuckwalla Valley (north to south) and (b) the center of a primary field of view toward the Coxcomb, Granite, and Palen Mountains across the valley. Although the extent of the development area is considerable, at this viewing distance the PSPP will appear subordinate to comparable in prominence to the broad, horizontal form of the valley floor, and the angular forms of the background mountains. Overall project dominance will be subordinate to co-dominant. (Ex. 301, p. C.12-20.)

View Blockage: From the vicinity of KOP 5, the project facilities will block from view a noticeable and central portion of Chuckwalla Valley floor. The resulting view blockage will be moderate. (Ex. 301, p. C.12-20.)

Overall Visual Change: From KOP 5, the values for visual contrast, project dominance, and view blockage, when taken together, will constitute a moderate level of overall visual change. (Ex. 301, p. C.12-20.)

Visual Impact Significance: When considered in the context of the overall moderate-to-high visual sensitivity of the existing landscape and viewing characteristics, the moderate visual change that would be perceived from KOP 5 would cause a significant and unavoidable visual impact. Given the large scale of the impact area, no available mitigation measures were identified that would be adequate to mitigate the significant visual impacts to levels that would be less than significant. Impacts would remain significant and unavoidable, even though the following conditions of certification will minimize structure contrast and lighting and glare impacts to the extent possible: **VIS-1**, Surface Color Treatment of Structures; **VIS-2**, Revegetation of Disturbed Soil Areas; **VIS-3**, Temporary and Permanent Exterior Lighting; and **VIS-4**, Project Design. (Ex. 301, p. C.12-20.)

4. The SCE Red Bluff Substation

In order to transmit the power generated at the PSPP to the electricity grid, a new substation is required. Southern California Edison Company (SCE) will construct and operate the substation, which will allow the electricity to be carried by SCE's Devers-Palo Verde No. 1 (DPV1) 500 kV transmission line. (Ex. 301, p. C.12-30.)

The SCE Red Bluff Substation project will be fully evaluated in a future EIS prepared by the BLM and an EIR prepared by the CPUC. The record contains an analysis of the construction and operational impacts of a 230/500-kV substation that would be located on approximately 90 acres, south of Interstate 10 and southeast of Desert Center. Substation components will include 230-kV and 500-kV lines, 230/ 500-kV transformer banks, associated switchracks, and a microwave tower. The substation will be located in an existing California Desert Conservation Area (CDCA) utility corridor, north of and adjacent to the existing DPV1 500 kV transmission line. (Ex. 301, p. C.12-30.)

The Red Bluff Substation would be located within the broad, open southern portion of the Chuckwalla Valley, a desert basin characterized by low-growing grasses and shrubs and surrounded by rugged, angular mountains. The substation would be located adjacent to an area of interesting rock formations known as Alligator Rock Area of Critical Environmental Concern (ACEC), just south of Desert Center and I-10. To the north is the broad flat expanse of the

central Chuckwalla Valley; while to the south are the steeply rising and rugged Chuckwalla Mountains. (Ex. 301, p. C.12-31.)

The views of this region also include the DPV1 500-kV transmission line and the Blythe Energy Project Transmission Line. These built structural features appear geometric and complex (lattice towers) to simple linear (conductors) in form with vertical and diagonal lines for the structures and curvilinear lines for the conductors. Structures appear light to dark gray in color and smooth in texture.

Although there are no rural residences in the general region of the Red Bluff Substation site, the primary viewing opportunity of concern would be from the I-10 and four wheel drive (4WD) designated open routes in the region. There are no California Officially-Designated or Eligible State Scenic Highways in the project vicinity. BLM-designated open routes are located west of the substation location to reach the Alligator Rock ACEC. (Ex. 301, p. C.12-31.)

The record shows that the rugged character of the, steeply rising Chuckwalla Mountains and the prominently visible and interesting rock formations of the adjacent Alligator Rock ACEC provide features of considerable visual variety and interest that enhance the visual quality of the site and surroundings, despite the influence of the nearby transmission lines. Therefore, visual quality is considered moderate. Viewer concern is considered high, from both I-10 and the Alligator Rock ACEC and viewer exposure is also high given the site's close proximity to I-10. Overall visual sensitivity would be moderate-to-high. (Ex. 301, p. C.12-31.)

Construction of the Red Bluff Substation will require a temporary laydown area located at or near the existing roadway at the site. Construction equipment and activities will be visible to motorists on I-10 and other local roadways. Due to the temporary duration of project construction, the record indicates that the adverse visual impacts during construction will not be significant. (Ex. 301, p. C.12-32.)

The expansion of an existing permanent access road to the Red Bluff Substation will create permanent visual scars across the undeveloped landscape. Installation of the Red Bluff Substation ROW on undeveloped lands will occur adjacent to a major existing utility corridor with three existing transmission lines and at least one additional proposed transmission line. While existing transmission lines and towers are an established part of the setting, the substation structures would exhibit a concentration of industrial character not seen with the existing transmission lines. The substation structures would be more numerous and would substantially increase the overall structural complexity

at this location. These visual effects would become more pronounced the closer the viewer is to the substation but would also be visible from more distant vantage points. (Ex. 301, p. C.12-32.)

The resulting visual contrast would be moderate-to-high with the addition of prominent industrial features to the foreground landscape characterized by a complex assemblage of geometric forms and complex to strong horizontal and vertical lines. The Red Bluff Substation would appear spatially prominent in foreground views from I-10 and Alligator Rock ACEC and project dominance would be co-dominant with the background angular forms of the Chuckwalla Mountains and the foreground valley floor. View blockage would be moderate-to-high and, depending on specific viewing locations along I-10, will block from view portions of the Chuckwalla Mountains and Alligator Rock ACEC. The values for visual contrast, project dominance, and view blockage, when taken together, constitute a moderate-to-high level of overall visual change. (Ex. 301, pp. C.12-32 to C.12-33.)

When considered within the context of the overall moderate-to-high visual sensitivity of the existing landscape and viewing characteristics, the moderate-to-high visual change that would result from construction and operation of the Red Bluff Substation will cause an adverse and significant visual impact. Given the large scale of the facility to be constructed and the availability of numerous, foreground and elevated (from Alligator Rock) viewing perspectives, no available mitigation measures have been identified that would be adequate to mitigate the significant visual impacts to less than significant. However, the following conditions of certification will minimize structure contrast and glare impacts to the extent possible: **VIS-1**, Surface Color Treatment of Structures; **VIS-2**, Revegetation of Disturbed Soil Areas; **VIS-3**, Temporary and Permanent Exterior Lighting; and **VIS-4**, Project Design. While project design mitigation measures would lessen the degree of the visual impacts, they would not be reduced to levels that would be less than significant, particularly when viewed from foreground vantage points in the Alligator Rock ACEC and along Interstate 10.

5. Cumulative Impacts and Mitigation

Section 15355 of the CEQA Guidelines (14 Cal. Code Regs.) defines a cumulative impact as the result of a combination of projects under consideration together with other existing or reasonably foreseeable projects causing related impacts. Cumulative impacts can result from individually minor but collectively significant impacts taking place over a period or time. The significance of a

cumulative visual impact depends on the degree to which the geographic area including the project is visually exposed and (1) the viewshed is altered; (2) views of a scenic resource are impaired; or (3) visual quality is diminished.

Cumulative impacts to visual resources occur where project facilities occupy the same field of view as other built facilities or impacted landscapes, and an adverse change in the visible landscape character is perceived. In some cases, a cumulative impact could also occur if a viewer perceives that the general visual quality or landscape character of an area is diminished by the proliferation of visible structures or construction effects, even if the changes are not within the same field of view as existing (or future) structures or facilities. (Ex. 301, p. C.12-34.)

PSPP would be constructed within the I-10 corridor. We adopt Staff's definition of the I-10 corridor as set forth in the evidence. (Ex. 300, pp. B.3-8 - B.3-13.) In this case, we reject, however, Staff's suggestion that PSPP's contribution to cumulative impacts could extend beyond that to include the entire million-acre CDCA. The concept of a "collective industrialization of the Conservation Area landscapes" (Ex. 301, p. C.12-36) adversely impacting the entire desert region or the CDCA is only loosely described in the record and lacks factual support.

There has been minimal development and/or industrialization of the project landscape within PSPP's viewshed (extending out 15 miles). Three existing projects fall within the viewshed of PSPP: Interstate 10, which has been built, the West-wide Section 368 Energy Corridor, which BLM designated for future transmission lines, and the Metropolitan Water District's Eagle Mountain Pumping Plant, which has been built. Interstate 10 is visible as a linear, horizontal feature in the landscape but does not possess industrial character (complex forms or lines) on the scale of an energy facility such as PSPP. The West-wide Section 368 Energy Corridor is a designation that implies the possibility of future linear projects within the corridor. However, the actual corridor designation does not impart any visual impact that could be considered in a cumulative context. The Eagle Mountain Pumping Plant, while potentially visible within the field of view of PSPP (at a distance of slightly over 14 miles), is minimally noticeable at the distant margin of the viewshed limit. Therefore, given the relative lack of perceptible industrial development (or development with characteristics similar to that of the proposed project) within the PSPP viewshed, the evidence suggests that PSPP would not cause a cumulatively significant effect within the context of existing cumulative conditions. (Ex. 301, p. C.12-35.)

However, the cumulative contribution of PSPP must also be considered within the context of future foreseeable projects, including future projects within the project area and future projects within the I-10 corridor. (Ex. 301, p. C.12-35.)

The record contains a list of 11 future foreseeable projects that would be located within PSPP's viewshed of 15 miles including:

- Devers-Palo Verde 2 Transmission Line Project
- Desert Southwest Transmission Line
- Green Energy Express Transmission Line Project
- Eagle Mountain Pumped Storage Project
- Genesis Solar Energy Project
- Chuckwalla Solar I
- Desert Sunlight
- Mojave Solar Park/Desert Lily Project
- Desert Lily Soleil
- Chuckwalla Valley Raceway
- Red Bluff Substation

(Ex. 301, p. C.12-36.)

With the exception of the Chuckwalla Valley Raceway, the other ten energy projects would share similar visual characteristics with PSPP. All 11 projects would contribute to the conversion of natural desert landscapes to landscapes with prominent industrial character. Therefore, there would be a significant cumulative impact to visual resources from the combination of PSPP and the 11 foreseeable projects listed above. (Ex. 301, p. C.12-36.)

The record also identifies an additional 12 future foreseeable energy projects along the I-10 corridor that would contribute to the sense of industrialization of the desert landscape as one drives between Blythe and Desert Center or Los Angeles and Phoenix in a broader context. In a regional context, the record identifies 125 renewable energy projects scattered throughout the California Desert Conservation Area. A significant cumulative impact to visual resources within the I-10 corridor is identified from the combination of PSPP and the 12 foreseeable projects. (Ex. 301, p. C.12-36; *see also* the **Land Use** section of this Decision.)

We therefore find that PSPP's visual impacts are cumulatively considerable in the context of the I-10 corridor's desert landscape when considering existing and

foreseeable projects, both within the immediate project viewshed and in a broader context encompassing the whole of the I-10 corridor.

6. LORS compliance

The proposed project is subject to the laws, ordinances, regulations, and standards (LORS) of the U.S. Government (Bureau of Land Management – BLM), State of California, and Riverside County. (Ex. 301, p. C.12-37.)

Federal
The project is in compliance with the impact disclosure requirements of the CDCA Plan through the visual impact analysis presented herein. (Ex. 301, p. C.12-37.)

State
The proposed project was found to be in compliance with the State Scenic Highway Program as pertains to compliance with scenic highway management objectives, because adjacent I-10 is neither an eligible nor designated scenic highway under the state program. (Ex. 301, p. C.12-37.)

Local
Several County of Riverside requirements pertain to protection/preservation of: natural features, the visual character of the existing landscape and scenic corridors are found in LU 4.1(o) (preservation of natural features), LU 13.1 (preservation of scenic vistas), LU 13.3 (compatible appearance with surrounding environment), LU 13.8 (view blockage), LU 20.1 (environmental character), and LU 20.4 (open space and rural character). However, these Riverside County requirements have limited applicability to the PSPP because, except for a 40-acre privately-owned parcel, the project site is federal land under the jurisdiction of the BLM. We have found that the PSPP is consistent with these LORS, to the extent they are applicable, if at all. See the **Land Use** section of this Decision for a more detailed discussion of the Project's consistency with the county general plan and zoning.

7. Alternatives

The record establishes that the visual impacts of the proposed project alternatives 2 and 3 would be similar to those of the PSPP. Therefore, the proposed project's impact significance conclusions and conditions of certification would also apply to the proposed project alternatives. (Ex. 301, p. C.12-48.)

8. Public Comment

Comments from Galati/Blek, LLP (Letter dated May 4, 2010) were responded to by Staff. (Ex. 301, pp. C.12-41 - C.12-43.

FINDINGS OF FACT

Based on the evidence of record, we find and conclude as follows:

1. Construction will occur over approximately 39 months.
2. The project's temporary construction activities' impact on visual resources will be mitigated to a less than significant impact with the effective implementation of Conditions of Certification **VIS-2** and **VIS-3**.
3. There is no federal, state, or local government designated scenic vista in the project vicinity.
4. Non-designated panoramic and scenic vistas are present and the proposed project will adversely affect these vistas.
5. There is no identified scenic resource on the project site.
6. There is no defined scenic resource identified in the vicinity of the project site that the proposed project would substantially damage.
7. Interstate 10 is not a State Scenic Highway.
8. The PSPP will introduce prominent structures with industrial character into the foreground to background views from I-10, SR 177, BLM recreational access roads, nearby Wilderness areas, and a few nearby residences, resulting in a substantial degradation of the existing visual character or quality of the site and its surroundings.
9. The impact of PSPP's lighting to nighttime views will be less than significant with the effective implementation of the specified mitigation measures and Condition of Certification **VIS-3**.
10. The PSPP will introduce a significant new source of substantial light or glare in the area that will adversely affect daytime or nighttime views.
11. All PSPP equipment other than the solar arrays will have non-reflective surfaces and neutral colors such that the project structures will not be a significant source of glare that could adversely affect daytime views.
12. The project's potential impacts on visual resources were analyzed from 5 defined KOPs.
13. Construction of the PSPP will result in significant visual impacts to non-designated scenic vistas from KOPs 1, 2, 3, 4, and 5.

14. Effective implementation of Conditions of Certification **VIS-1, VIS-2, VIS-3** and **VIS-4**, is required for impacts to views represented by KOPs 1, 2, 3, 4, and 5, but will not lower impacts to these KOPs to less than significant levels.

15. The Red Bluff Substation will cause an adverse and significant visual impact.

16. The visual effects of the PSPP and transmission line in combination with past, present, and reasonably foreseeable projects in the I-10 corridor will substantially contribute to significant cumulative visual impacts.

CONCLUSIONS OF LAW

1. Implementation of the following Conditions of Certification will result in attenuation of significant direct, indirect, or cumulative impacts to visual resources, but will not lower all project-related impacts to less than significant levels.
2. The project will comply with federal, state and local applicable laws, ordinances, regulations and standards pertaining to visual resources.
3. The PSPP will contribute to anticipated cumulative visual impacts of past and foreseeable future solar projects in the I-10 corridor which are considered cumulatively considerable and potentially significant.
4. A Statement of Overriding Considerations will be required for direct and cumulative impacts associated with the project that will not be reduced to less than significant levels.

CONDITIONS OF CERTIFICATION

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat the surfaces of all project structures and buildings visible to the public such that a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following in-field consultation with the Energy Commission/BLM Visual Resources specialist and other representatives as deemed necessary, the project owner shall submit for Compliance Project Manager (CPM) review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan shall include:

A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be fielded tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces;

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 pantone 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 shall 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 the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to Riverside County for review and comment. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit to each one set of electronic color photographs from the same key observation points identified in (d) above. The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

REVEGETATION OF DISTURBED SOIL AREAS

VIS-2 The project owner shall revegetate disturbed soil areas to the greatest practical extent, as described in Condition of Certification **BIO-8**. In order

to address specifically visual concerns, the required Closure, Revegetation and Rehabilitation Plan shall include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the other ancillary operation and support structures.

Verification: Refer to Condition of Certification **BIO-8**.

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-3 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the 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 (which should be an on-demand, audio-visual warning system that is triggered by radar technology); d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances. The project owner shall submit to the CPM for review and approval and simultaneously to the County of Riverside for review and comment a lighting mitigation plan that includes the following:

A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

B. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

C. Lighting shall 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 shall 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 shall 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) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

Verification: At least 90 days prior to ordering any permanent exterior lighting or temporary construction lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan. At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and simultaneously to the County of

Riverside for review and comment a lighting mitigation plan. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

The project owner shall not order any exterior lighting until receiving CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection. If after inspection, the CPM notify the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days.

PROJECT DESIGN

VIS-4 To the extent possible, the project owner shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see VIS-1) and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals shall be based on the following factors:

- **Earthwork:** Select locations and alignments that fit into the landforms to minimize the size of cuts and fills. Avoid hauling in or hauling out of excess earth cut or fill. Avoid rounding and/or warping slopes. Retain existing rock formations, vegetation, and drainage. Tone down freshly broken rock faces with emulsions or stains. Use retaining walls to reduce the amount and extent of earthwork. Retain existing vegetation by using retaining walls or fill slopes, reducing surface disturbance, and protecting roots from damage during excavations. Avoid soil types that generate strong color contrasts. Reduce dumping or sloughing of excess earth and rock on downhill slopes.

- **Vegetation Manipulation:** Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.

- **Structures:** Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural land forms and vegetation. Reduce the line contrast created by straight edges.

- **Linear Alignments:** Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts and bisecting ridge tops. Hug vegetation lines and avoid open areas such as valley bottoms. Cross highway corridors and less sharp angles.

- **Reclamation and Restoration:** Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Replace soil, brush, rocks, and natural debris over disturbed area. Newly introduce plant species should be of a form, color, and texture that blends with the landscape.

Verification: As early as possible in the site and facility design, the project owner shall meet with the CPM to discuss incorporation of these above factors into the design plans. At least 90 days prior to final site and facility design, the project owner shall contact the CPM to review the incorporation of the above factors into the final facility and site design plans. If the CPM determines that the site and facility plans require revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM.

VIII. OVERRIDE FINDINGS

Our analysis of the Palen Solar Power Project (PSPP) finds that it will have some significant unmitigated environmental impacts. If we are to approve the project, the California Environmental Quality Act (CEQA) requires that we make certain findings.

The applicable CEQA requirement is contained in Public Resources Code Section 21081:

> "21081. Pursuant to the policy stated in Sections 21002 and 21002.1, no public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out unless both of the following occur:
>
> (a) The public agency makes one or more of the following findings with respect to each significant effect:
>
> (1) Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.
>
> (2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.
>
> (3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.
>
> (b) With respect to significant effects which were subject to a finding under paragraph (3) of subdivision (a), the public agency finds that specific overriding economic, legal, social, technological, or other benefits of the project outweigh the significant effects on the environment."

1. Significant Project Impacts

As identified and discussed in the specific topic sections of this Decision we find that PSPP will have the following significant environmental impacts:

- **Cultural Resources**. The project may permanently change and/or result in the destruction of cultural resources, both known and as yet unknown,

contributing to a cumulatively considerable impact which will be mitigated to the extent possible, but may not be fully mitigated. (PMPD, Cultural Resources section, pp. 33, paragraph 4; 34, findings of fact 5 and 7.)

- **Land Use**. The contribution of PSPP, in combination with the other renewable energy projects proposed in the region, to the loss of desert lands, is cumulatively significant. Lands formerly available for multiple uses—habitat, open space, grazing, and recreation—would no longer be available for those uses once a power plant is constructed. (PMPD, Land Use section, pp. 14, paragraph 5; 16, findings of fact 11 and 13 and conclusions of law 2 and 3.)

- **Visual Resources**. PSPP would result in the installation of a large, industrial facility in the I-10 corridor. We find significant visual impacts from several Key Observation Points in the Chuckwalla Valley, the Palen McCoy Wilderness, and along I-10. A significant cumulative impact to visual resources in eastern Riverside County is identified from the combination of PSPP and other existing and proposed energy projects. The PSPP transmission line will result in a substantial contribution to cumulative visual impacts in the context of existing cumulative conditions. PSPP's contribution to visible industrialization of the desert landscape also constitutes a substantial contribution to a significant visual impact when considering existing and foreseeable projects, both within the immediate project viewshed and in a broader context encompassing the whole of the I-10 corridor. (PMPD, Visual Resources section, pp. 1, paragraph 2; 28, paragraph 5; 30, finding of fact 13; 31, findings of fact 14, 15 and 16 and conclusions of law 1, 3 and 4.)

2. Project Benefits

The PSPP, if constructed and operated as proposed, will provide the following benefits to California and its residents:

- PSPP will provide 500 MW of renewable energy power, which will assist in meeting California's Renewable Portfolio Standard, which specifies that retail sellers of electricity serve 20 percent of their load with renewable energy by 2010. (Pub. Util. Code, § 399.11 et seq.) Gubernatorial Executive Orders increase the requirement to 33 percent by 2020. (Governor's Executive Order S-14-08.)

- Producing electricity from renewable resources provides a number of significant benefits to California's environment and economy, including improving local air quality and public health, reducing global warming emissions, developing local energy sources and diversifying our energy supply, improving energy security, enhancing economic development and creating green jobs. (2009 CEC *Integrated Energy Policy Report*, p. 231.)

- Scientific studies quantify the negative impacts of global climate change to California's and the world's population, environment, food supplies, flora and fauna, coastal regions, and public health. In order to reduce the impact, the State has adopted goals to reduce greenhouse gas emissions through renewable energy development. (PMPD, Greenhouse Gases Emissions section, p. 3, paragraph 2.)

- PSPP will assist the state in meeting its ambitious greenhouse gas reduction targets by generating 500 MW of electricity with vastly lower greenhouse gas emissions than existing fossil fuel burning generating facilities. (PMPD, Greenhouse Gases Emissions section, pp. 12; 14, findings of fact 14 and 16.)

- By generating electricity with the use of only a small amount of fossil fuels, PSPP will reduce California's dependence on fossil fuels, a diminishing energy source. (PMPD, Greenhouse Gases Emissions section, p. 6, final paragraph.)

- PSPP will provide construction jobs for an average and peak workforce of 566 and 1,145, respectively, and approximately 134 jobs during operations. The construction work force is expected to be drawn from the Riverside/San Bernardino County region. Most of those jobs will require highly trained workers. (PMPD, Socioeconomics section, p. 3, paragraphs 2 and 4.)

- Construction and operation of PSPP will provide a boost to the economy from the purchase of major equipment, payroll, and supplies, increased sales tax revenue, and property taxes. Additional indirect economic benefits, such as employment in local service industry jobs and induced employment, will result from these expenditures as well. (PMPD, Socioeconomics section, p. 5.)

3. Comparison of Project Alternatives

As is discussed in the Alternatives section, none of the project alternatives will significantly reduce the above-referenced project impacts while still meeting the defined project objectives, even though Reconfigured Alternatives #2 and #3, which we have adopted and recommend, reduce other significant impacts of the proposed project below the level of significance. The no-project alternative, which would eliminate the project's impacts, would also eliminate its benefits. The distributed solar energy (photovoltaic or thermal) generation and other renewable technologies are required *in addition to* large scale projects such as this in order to meet our renewable energy and GHG policy goals; the two complement, rather than compete with each other. (PMPD, Alternatives section, pp. 39 – 40, findings of fact 2, 4, 5, 6, 7, 8, 9, 10, 11 and 12.)

4. Site Characteristics

The Palen Project site is adjacent to, and in the vicinity of, extensive existing and planned development, including Interstate 10 (I-10), and existing electricity infrastructure, including major transmission lines and other proposed solar power projects. (PMPD, Land Use section, pp. 2, final paragraph; 3, paragraph 1.)

5. Testimony of Terrence O'Brien

Terrence O'Brien, Deputy Director of the California Energy Commission Siting, Transmission and Environmental Protection Division, representing the Energy Commission staff, submitted written testimony entitled Comments Regarding a Possible Energy Commission Finding of Overriding Considerations. Mr. O'Brien testified that in Staff's opinion it would be appropriate for the Commission to approve the project and find that the project is required for public convenience and necessity, and that there are no more prudent and feasible means of achieving such public convenience and necessity. (Ex. 301; 10/13/10 RT, 10:1–23.)

6. In arriving at the following findings, we have taken official notice of the following documents:

- Climate Action Team Report to Governor Schwarzenegger and the Legislature. CalEPA, March 2006.
- AB 32 Scoping Plan. CARB, December 2008.
- Integration of Renewable Resources. CAISO, Nov. 2007.
- 2007 Integrated Energy Policy Report. CEC, Nov. 2007.
- 2009 Integrated Energy Policy Report. CEC. Nov. 2009.
- Draft Final Opinion on Greenhouse Gas Regulatory Strategies: Joint Agency Proposed Final Opinion. CPUC/CEC 2008.
- Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California. CEC (MRW and Associates). May 2009.

Based upon the above evidence and Staff recommendations, we find that overriding considerations warrant the approval of the project as mitigated through the Conditions of Certification we adopt herein. We further find that the project is required for public convenience and necessity and that there are no more prudent and feasible means of achieving such public convenience and necessity.

FINDINGS OF FACT

Based on the evidence and the conclusions drawn in other sections of this Decision, we make the following findings and conclusions:

1. Climate change poses a serious threat to the economic well-being, public health, natural resources, and the environment of California.

2. The proposed project will have the following significant impacts which cannot be mitigated to insignificant levels:

    a. The cumulative loss of federally administered multiple use lands in the Chuckwalla Valley and Colorado Desert due to the project's cumulatively considerable contribution of impacts when considered in combination with other energy projects proposed in the Southern California desert.

    b. Permanent change and/or destruction of cultural resources, both known and as yet unknown, contributing to a cumulatively considerable impact which will be mitigated to the extent possible, but may not be fully mitigated.

    c. Degradation of scenic vistas for motorists, recreationists, hikers, and others from various points in the Chuckwalla Valley, McCoy Mountains, and I-10 corridor.

3. This Decision imposes all feasible mitigation measures to reduce the significant impacts of the project to the lowest possible, though still significant, levels.

4. The project will provide the following benefits:

    a. Contribution of 500 MW of renewable energy power toward meeting California's Renewable Portfolio Standard and our renewable energy and GHG policy goals.

    b. A significant reduction in greenhouse gas emissions when compared with existing fossil fuel-burning generating facilities.

    c. Other important benefits to California's environment and economy include improving local air quality and public health, developing local energy sources, and diversifying our energy supply.

    d. Reduction of California's dependence on fossil fuels.

    e. Creation of construction jobs for an average and peak workforce of 566 and 1,145, respectively, and approximately 134 jobs during operations, most requiring highly trained workers.

f. Provide a boost to the economy from the purchase of major equipment, payroll, and supplies, increased sales tax revenue, and property taxes. Additional indirect economic benefits, such as indirect employment, and induced employment, will result from these expenditures as well.

g. The PSPP is adjacent to, and in the vicinity of, extensive existing development, Interstate 10, and existing electricity infrastructure, including major transmission lines and other proposed solar power projects.

5. The project is required for public convenience and necessity and that there are no more prudent and feasible means of achieving such public convenience and necessity.

CONCLUSIONS OF LAW

1. The above described project benefits outweigh the significant impacts identified above.

2. It is appropriate to approve the PSPP despite its remaining significant environmental impacts.

3. It is the intent of this Commission to take all reasonable measures to preserve the continued existence of the desert special-status species. This Commission believes that this project, and other renewable energy projects, will result in the reduction of greenhouse gases which will help curb or reduce the impact of climate change to California, thereby allowing for the continued existence of the desert special-status species.

4. Therefore, we exercise our authority to override the remaining significant unavoidable impacts that may result from this project, even with the implementation of the required mitigation measures described in this Decision.

Appendix A: *Laws, Ordinances, Regulations, and Standards*

Appendix B: *Exhibit List*

Appendix C: *Proof of Service List*

APPENDICES

Air Quality

Applicable LORS	Description
Federal	
40 Code of Federal Regulations (CFR) Part 52	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and Offsets. Permitting and enforcement delegated to South Coast Air Quality Management District (SCAQMD). Prevention of Significant Deterioration (PSD) requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The PSPP is a new source that does not have a rule listed emission source thus the PSD trigger levels are 250 tons per year for NOx, VOC, SO_2, PM2.5 and CO.
40 CFR Part 60	New Source Performance Standards (NSPS), Subpart Dc Standards of Performance for Small Industrial-Commercial-Institutional Steam Generation Units. Establishes recordkeeping and reporting requirements for natural gas (including propane) fired steam generating units. Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for compressions ignition internal combustion engines, including emergency generator and fire water pump engines.
40 CFR Part 93 General Conformity	Requires determination of conformity with State Implementation Plan for projects requiring federal approvals if project annual emissions are above specified levels.
State	
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
California Code of Regulations (CCR) Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, established maximum emission rates, establishes recordkeeping requirements on stationary compression ignition engines, including emergency generator and fire water pump engines.
Local (South Coast Air Quality Management District)	
Rules 201, 203, and 212 – Permit to Construct, Permit to Operate, and Standards for Approving Permits and Issuing Public Notice	Establishes the requirements to obtain a Permit to Construct and Permit to Operate for emission sources.
Rule 401 – Visible Emissions	Limits visible emissions.
Rule 402 – Nuisance	Prohibits the discharge of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public or which endanger the comfort, response, health or safety of the public or which cause injury or damage to business or property.
Rule 403 – Fugitive Dust	Limits fugitive emissions from certain bulk storage, earthmoving, construction and demolition, and manmade conditions that may cause wind erosion.

Applicable LORS	Description
Rule 404 – Particulate Matter Concentration	The rule limits particulate matter (PM) emissions. PM emission limits included in the rule are functions of the exhaust flow rate from the regulated device.
Rule 409 – Combustion Contaminants	Limits combustion contaminant discharge into the atmosphere from fuel burning equipment to 0.1 grain or less per cubic foot of gas calculated to 12% of carbon dioxide (CO_2) at standard conditions.
Rule 431.1 – Sulfur Compounds of Gaseous Fuels	Limits discharge into the atmosphere of sulfur compounds from the burning of gaseous fuels.
Rule 431.2 – Sulfur Compounds of Liquid Fuels	Limits discharge into the atmosphere of sulfur compounds from the burning of liquid fuels.
Rule 463 – Organic Liquids Storage	Sets standards for storage of organic liquids with a true vapor pressure of 0.5 pounds per square inch or greater.
Rule 474–Fuel Burning Equipment–Oxides of Nitrogen	Limits the discharge of NO_2 to the atmosphere to the concentrations specified in the rule.
Regulation IX – New Source Performance Standard	Incorporates the Federal NSPS (Title 40 CFR 60) rules by reference.
Rule 1110.2 – Emissions From Gaseous and Liquid-Fueled Internal Combustion Engines	The purpose of this rule is to reduce NOx, VOCs, and CO from engines.
Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters	This rule limits NOx emissions from boilers, steam generators, and process heaters.
Rule 1166 – VOC Emissions from Decontamination of Soil	Establishes requirements to control VOC emissions from handling of VOC-contaminated soil.
Regulation XIII – New Source Review	Establishes the pre-construction review requirements, including Best Available Control Technology and emission offset requirements for new, modified or relocated facilities to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards.

ALTERNATIVES

California Environmental Quality Act (CEQA)

Energy Commission staff is required by agency regulations to examine the "feasibility of available site and facility alternatives to the Applicant's proposal which substantially lessen the significant adverse impacts of the proposal on the environment." (Cal. Code Regs., tit. 20, § 1765.)

The "Guidelines for Implementation of the California Environmental Quality Act," Title 14, California Code of Regulations, Section 15126.6(a), requires an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project."

In addition, the analysis must address the No Project Alternative. (Cal. Code Regs., tit. 14, § 15126.6[e].) The analysis should identify and compare the impacts of the various alternatives, but analysis of alternatives need not be in as much detail as the analysis of the proposed project.

The range of alternatives is governed by the "rule of reason," which requires consideration only of those alternatives necessary to permit informed decision making and public participation. CEQA states that an environmental document does not have to consider an alternative if its effect cannot be reasonably ascertained and if its implementation is remote and speculative. (Cal. Code Regs., tit. 14, §15126.6[f][3].) However, if the range of alternatives is defined too narrowly, the analysis may be inadequate (*City of Santee v. County of San Diego* [4th District, 1989] 214 Cal. App. 3d 1438).

Biological Resources

Applicable LORS	Description
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 protects federally threatened and endangered plants and animals and their critical habitats.
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, 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 U.S. Army Corps of Engineers (USACE) for a discharge of dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a regional water 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 will not violate state and federal water quality standards.
Eagle Act (Title 50, Code of Federal Regulations, section 22.26)	Would authorize limited take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) under the Eagle Act, where the taking is associated with, but not the purpose of activity, and cannot practicably be avoided.
Eagle Act (Title 50, Code of Federal Regulations, section 22.27)	Would provide for the 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; or the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests would be allowed to be taken except in the case of safety emergencies.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	This law provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.
California Desert Conservation Area (CDCA) Plan	The California Desert Conservation Area (CDCA) Plan was established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how the BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.
Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	A regional amendment to the CDCA Plan approved in 2002, NECO protects and conserves natural resources while simultaneously balancing human uses in the northern and eastern portion of the Colorado Desert.
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.

Applicable LORS	Description
Executive Order 11312	Prevent and control invasive species.
Wild Free-Roaming Horse and Burro Act (Public Law 92-195)	Wild horses and burros are protected from capture, branding, harassment, and death, and managed with the intent to achieve and preserve the natural ecological balance on public lands.
Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994a) and Draft Revised Recovery Plan (USFWS 2008a)	Describes a strategy for recovery and delisting of the desert tortoise.
State	
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species.
Protected furbearing mammals (California Code of Regulations, Title 14, section 460)	Fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time.
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.
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations Title 14, section 670.7).
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.
Nongame mammals (Fish and Game Code section 4150)	Makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the Fish and Game Code or in accordance with regulations adopted by the commission.
Significant Natural Areas (Fish and Game Code section 1930 and following)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.
California Environmental Quality Act (CEQA), CEQA Guidelines section 15380	CEQA defines rare species more broadly than the definitions for species listed under the state and federal endangered species acts. Under section 15830, species not protected through state or federal listing but nonetheless demonstrable as "endangered" or "rare" under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFG's Special Animals List.

Applicable LORS	Description
Streambed Alteration Agreement (Fish and Game Code sections 1600 and following)	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.
California Native Plant Protection Act of 1977 (Fish and Game Code section 1900 and following)	Designates state rare, threatened, and endangered plants.
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 and following 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.
Porter-Cologne Water Quality Control Act	Regulates discharges of waste and fill material to waters of the state, including "isolated" waters and wetlands.
Local	
Riverside County General Plan	Protection and preservation of wildlife for the maintenance of the balance of nature.

Desert Renewable Energy Conservation Plan – Interim Planning

In addition to the federal, state, and local LORS summarized above, federal and state agencies are currently collaborating to establish joint policies and plans to expedite development of California's utility scale renewable energy projects. On October 12, 2009, the State of California and the U.S. Department of Interior entered into a Memorandum of Understanding (MOU) on renewable energy, building on existing efforts by California and its federal partners to facilitate renewable energy development in the state. The MOU stems from California and Department of Interior energy policy directives, and California's legislative mandate to reduce greenhouse gases to 1990 levels by 2020, and meet the goal of 33 percent of California's electricity production from renewable energy sources by 2020.

The California-Department of Interior MOU expands on several MOUs issued in 2008 to establish the activities of the California Renewable Energy Action Team (REAT). The REAT was established with California Executive Order S-14-08 (issued November 18, 2008), to "*establish a more cohesive and integrated statewide strategy, including greater coordination and streamlining of the siting, permitting, and procurement processes for renewable generation*…"

The Energy Commission and CDFG are the primary state collaborators in the REAT, operating under a November 18, 2008 MOU between the two agencies

to create a “one-stop process” for permitting renewable energy projects under their joint permitting authority. The BLM and the USFWS also participate in the REAT under a separate MOU signed in November 2008, which outlines the state and federal cooperation of the group. The October 12, 2009 MOU between California and the Department of Interior reiterates several tasks of the REAT provided for in S-14-08 and the Energy Commission–Fish and Game MOU.

The REAT’s primary mission is to streamline and expedite the permitting processes for renewable energy projects in the Mojave and Colorado Desert eco-regions within the State of California, while conserving endangered species and natural communities at the ecosystem scale. To accomplish this goal the REAT Agencies are developing a Desert Renewable Energy Conservation Plan (DRECP), a science-based process for reviewing, approving, and permitting renewable energy applications in California. Once the DRECP is complete, anticipated in late 2012, the plan will provide tools to expedite coordination of federal and state endangered species act permitting. The DRECP would also offer a unified framework for state and federal agencies to oversee mitigation actions, including land acquisitions, for listed species.

The REAT Agencies recognize that some renewable energy projects are scheduled to be approved prior to completion of the DRECP. Section 8.9 of the October 2009 Draft Planning Agreement for the DRECP <www.energy.ca.gov/2009publications/...2009.../REAT-1000-2009-034.PDF> provides explicit guidance for such interim projects, and directs the REAT Agencies to ensure that permitting for these projects:

- be consistent with the preliminary conservation objectives for the DRECP;
- not compromise successful completion and implementation of the DRECP;
- facilitate Federal Endangered Species Act, California Endangered Species Act, National Environmental Policy Act, and California Environmental Quality Act compliance; and
- not be unduly delayed during preparation of the DRECP.

REAT Account and SBX8 34

The REAT agencies recently signed a Memorandum of Agreement (MOA) to establish a REAT Account that may be used by project developers to deposit funding for specified mitigation for approved renewable energy projects in the Mojave and Colorado Desert region of southern California (the MOA is available at <www.energy.ca.gov/33by2020>). For each project using the REAT Account an individual subaccount would be established for project specific tracking, compliance and accounting purposes. The subaccount would include a list of the specific mitigation actions, the cost, a timeframe for carrying out the actions, and identify which of the REAT agencies would be responsible for requiring and coordinating the mitigation actions. The National Fish and Wildlife Foundation (NFWF) would manage the subaccount on behalf of the REAT agencies, and at

their direction would disburse mitigation funding to satisfy mitigation requirements for impacts to biological resources. NFWF is a charitable non-profit corporation established in 1984 by the federal government to accept and administer funds to further the conservation and management of fish, wildlife, plants and other natural resources <hwww.nfwf.org>. Use of the REAT Account would not change any of the requirements a project proponent must fulfill in order to comply with applicable State and Federal environmental laws governing the permitting of the projects. The REAT

The SBX8 34 legislation that was recently signed into law by the Governor created a $10 million loan that provides for advanced mitigation habitat purchases. This advanced mitigation can be used by a qualifying solar renewable energy project to receive credit for implemented mitigation after a project proponent pays into the Renewable Energy Development Fee Trust Fund that was created by the SBX8 34 legislation (SBX8 34 Trust Fund). Funds in the MOA REAT Account and the SBX8 34 Trust Fund are similar in that renewable energy project proponents pay into accounts set up to receive project-specific mitigation funds, and a third party entity implements the mitigation actions.

CULTURAL RESOURCES

Applicable LORS	Description
Federal	
Antiquities Act of 1906 16 United States Code (USC) 431–433	Establishes criminal penalties for unauthorized destruction or appropriation of "any historic or prehistoric ruin or monument, or any object of antiquity" on federal land; empowers the President to establish historical monuments and landmarks.
Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470aa et seq.	Protects archaeological resources from vandalism and unauthorized collecting on public and Indian lands.
State	
Public Resources Code (PRC), Section 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance.
PRC, Sections 5097.99 and 5097.991	5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.
Health and Safety Code (HSC), Section 7050.5	Makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery; Requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Local	
Riverside County General Plan, Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.2–19.4	OS 19.2 requires the review of all proposed development for archaeological sensitivity; OS 19.3 Employs procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of public and volunteer organizations. OS 19.4 Require a Native American Statement as part of the environmental review process on development projects with identified cultural resources.
Riverside County General Plan, Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.5–19.7	OS 19.5 allows the History Division of the Riverside County Regional Park and Open-Space District to evaluate large project proposals for their potential preservation or destruction of historic sites; requires projects to provide feasible mitigation for impacts to historic sites prior to county approval. OS 19.6 enforces the California State Historic Building Code so that historic buildings can be preserved and used without posing a hazard to public safety. OS 19.7 endorses the allocation of resources and/or tax credits to prioritize retrofit of historic structures.

Applicable LORS	Description
Riverside County General Plan, Exhibit A, CEQA Findings of Fact and Statement of Overriding Considerations, Mitigation Monitoring Program, Measures 4.7.1A, 4.7.1B, and 4.7.1C	Outlines mitigation measures for cultural resources monitoring programs.

Facility Design

Applicable LORS	Description
Federal	
	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	
	2007 (or latest edition) California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	
	Riverside County regulations and ordinances
General	
	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

Geology and Paleontology

Applicable LORS	Description
Federal	
Antiquities Act of 1906 (16 United States Code [USC], 431-433)	The proposed PSPP facility site is located entirely on land currently administered by the Bureau of Land Management (BLM). Although there is no specific mention of natural or paleontologic resources in the Act itself, or in the Act's uniform rules and regulations (Title 43 Part 3, Code of Federal Regulations [43 CFR Part 3], 'objects of antiquity' has been interpreted to include fossils by the Federal Highways Act of 1956, the National Park Service (NPS), the BLM, the Forest Service (USFS), and other Federal agencies.
Federal Land Policy and Management Act (FLPMA) of 1976 (43 USC 1701-1784)	Mandates that the BLM manage public lands under the principles of multiple use and sustained yield unless otherwise specified by law, and to protect the quality scientific, scenic, historical, archeological, and other values, and to develop 'regulations and plans for the protection of public land areas of critical environmental concern', which include 'important historic, cultural or scenic values'. Also charged with the protection of 'life and safety from natural hazards'.
Paleontologic Resources Preservation Act (PRPA) (Public Law [PL] 111-011)	Authorizes Departments of Interior and Agriculture Secretaries to manage the protection of paleontologic resources on Federal lands.
National Historic Preservation Act of 1966 (NHPA) (16 USC 470)	Establishes policies for the 'preservation of the prehistoric and historic resources of the United States', under the direction of the Secretary of the Interior and the BLM.
State	
California Building Code (CBC), 2007	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone.
The Seismic Hazards Mapping Act, PRC Section 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC, Chapter 1.7, sections 5097.5 and 30244	Regulates removal of paleontologic resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Society for Vertebrate Paleontology (SVP), 1995	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontologic Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontologic resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.

Applicable LORS	Description
Local	
Riverside County General Plan 2000, Safety Element	Adopts the Uniform Building Code (UBC) (1997), which provides design criteria for buildings and excavations. The UBC is superseded by the CBC (2007). Requires mitigation measures for geologic hazards, including seismic shaking, surface rupture (adopts APEFZ Act), liquefaction, unstable soils and slopes, and flooding.
Riverside County General Plan 2000, Multipurpose Open Space Element	Provides for 'preservation of cultural, historical, archaeological, paleontologic, geologic and educational resources'. Also provides a map showing paleontologic sensitivity in the county.

Hazardous Materials Management

Applicable LORS	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r)	Requires states to implement a comprehensive system informing 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.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
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.
Hazardous Material Business Plan, Cal HSC Sections 25500 to 25541; 19 CCR Sections 2720 to 2734	Requires the submittal of a chemical inventory and planning and reporting for management of hazardous materials.

Applicable LORS	Description
Hazardous Substance Information and Training Act, 8 CCR Section 339; Section 3200 et seq., 5139 et seq., and 5160 et seq.	Requires listing and implementation of specified control measures for management of hazardous substances.
California HSC Sections 25270 through 25270.13	Requires the preparation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan if 10,000 gallons or more of petroleum is stored on-site. The above regulations would also require the immediate reporting of a spill or release of 42 gallons or more to the California Office of Emergency Services and the Certified Unified Program Authority (CUPA).
Process Safety Management: Title 8 CCR Section 5189	Requires facility owners to develop and implement effective process safety management plans when toxic, reactive, flammable, or explosive chemicals are maintained on site in quantities that exceed regulatory thresholds.
Local	
Riverside County Fire Code, Riverside County Code Chapter 8.32: Ordinance No. 787	Adopts the California Fire Code, 2007 Edition, with some of its appendices, into Riverside County regulations.
Disclosure of Hazardous Materials and the Formulation of Business Emergency Plans: Riverside County Ordinance 651	Requires disclosure where businesses handle hazardous materials and requires the development of response plans; designates Riverside County Department of Environmental Health as responsible for administration and enforcement of local codes.

Land Use

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
Federal				
Federal Land Policy and Management Act 1976 ***The California Desert Conservation Area Plan 1980 as amended***	In 1976 Congress passed the Federal Land Policy Management Act - a law to direct the management of the public lands of the United States. In section 601, Congress required the preparation of a comprehensive long-range plan for the California Desert Conservation Area (CDCA). The purpose of this plan was to establish guidance for the management of the public lands in the California Desert administered by the U.S. Bureau of Land Management.			
Chapter 2 Multiple-Use Classes: - Multiple-Use Class M (Moderate Use)	Multiple-Use Class M (Moderate Use) is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause. All types of electrical generation plants may be allowed in accordance with state, federal, and local laws. New gas, electric, and water transmission facilities and cables for interstate communication may be allowed only within designated corridors. Existing facilities within designated corridors may be maintained and upgraded or improved in accordance with existing rights of way grants or by amendments to right of way grants. Existing facilities outside designated corridors may only be maintained but not upgraded or improved.	Project would be consistent if the BLM approves a project-specific CDCA Plan amendment.	The proposed project is to be constructed on federal land administered by the BLM. Sites associated with power generation or transmission not identified in the CDCA Plan is considered through the CDCA Plan amendment process (USDOI1980). All requests for amendment must be submitted to the District Manager of the California Desert District (USDOI1980). The applicant has submitted an application to the BLM requesting a project-specific CDCA Plan amendment and right of way.	Condition of certification **LAND-1**

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
Chapter 3 Plan Elements - Energy Production And Utility Corridors Element	Sites associated with power generation or transmission not identified in the Plan will be considered through the CDCA Plan Amendment process. Utility needs which do not conform to an adopted corridor system will be processed by means of a Plan Amendment in conjunction with necessary permit hearings required by other agencies. The scope of the CDCA allows the designation of corridors which address the following types of utility facilities: • New electrical transmission towers and cables of 161 kV (kilovolt) or above; and • All pipelines with diameters greater than 12 inches. The following criteria are used in determining decisions contained in this element. These criteria also will be used when evaluating future applications: (1) Minimize the number of separate rights of way by utilizing existing rights of way as a basis for planning corridors; (2) Encourage joint use of corridors for transmission lines, canals, pipelines, and cables; (3) Provide alternative corridors to be considered during processing of applications; (4) Avoid sensitive resources wherever possible; (5) Conform to local plans whenever possible; (6) Consider wilderness values and be consistent with final wilderness recommendations; (7) Complete the delivery-systems network; (8) Consider ongoing projects for which decisions have been made, for example, the Intermountain Power Project; and (9) Consider corridor networks which take into account power needs and alternative fuel	Project would be consistent if the BLM approves a project-specific CDCA Plan amendment.	The transmission line route for the gen-tie line between the Palen solar project and the proposed SCE Red Bluff Substation has not been determined. The exact location of the substation has not been determined by SCE at the present time. Sites associated with power generation or transmission not identified in the CDCA Plan are considered through the CDCA Plan amendment process (USDOI1980). All requests for amendment must be submitted to the District Manager of the California Desert District (USDOI1980).	Condition of certification **LAND-1**

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
	resources.			
State				
Subdivision Map Act (Public Resources Code Section 66410-66499.58)	Provides procedures and requirements regulating land division (subdivisions), public improvements, and parcel legality. Regulation and control of the design and improvement of subdivisions have been vested in the legislative bodies of local agencies. A local agency shall disapprove a map for failure to meet or perform any of the requirements or conditions imposed by this division or local ordinance enacted pursuant thereto.			
Riverside County Ordinance No. 460 – Regulating The Division Of Land Of The County of Riverside As Amended through Ordinance No. 460.147, effective February 1, 2007	All land divisions in the unincorporated area of the County of Riverside as hereinafter are subject to all of the applicable provisions of the Subdivision Map Act and this ordinance. All land divisions shall conform to the Comprehensive General Plan of Riverside County, with all applicable specific plans, with the requirements of the Land Use Ordinance and other ordinances, and with the requirements of this ordinance except as hereinafter provided.	Project would be consistent as conditioned.	Within the nearly 3,000 acre project site is a 40 acre property (APN: 810-110-007) in private ownership[1]. The applicant has an option to purchase the 40 acre parcel. The Riverside County Land Information System identifies the parcel being under the County of Riverside's jurisdiction. It and AFC, Volume II, Appendix A Surrounding Properties: Assessor's Parcel Nos./ Property Owners shows the parcel as being a property owned by an individual who maintains a mailing address in Folsom, California. The conceptual layout plan for the project shows structures and equipment being constructed over the 40 acre parcel line	Condition of certification **GEN-1**. See the **FACILITY DESIGNED** section of the RSA.

[1] Intermingled land ownership patterns in much of the CDCA make management difficult for BLM and other Federal agencies, as well as State and local agencies, Indian reservations and private landowners. Selected land exchanges and boundary adjustments will be required to improve the opportunities for use or protection of all lands in the Desert, and to promote effective management of public lands administered by the Bureau of Land Management. Participates in these exchanges and boundary adjustments could include private, non-Federal, and Federal government agencies (USDOI1980, pg. 97).

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
			boundary and across federal and state/county jurisdictional boundaries; see **Land Use Figure 4**.	
Local				
Riverside County General Plan	State planning law requires each city and county to prepare and adopt a comprehensive, long-term general plan for its physical development *(Government Code §65300 et. seq.)* The plan must include a statement of development policies and a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals *(Government Code §65302).*			
Riverside County General Plan **Chapter 3 - Land Use Element** Land use designation: - Open Space-Rural (OS-RUR)	The "Open Space-Rural" land use designation is applied to remote privately owned open space areas with limited access and a lack of public services. The following policies apply to properties designated as "Open Space-Rural" on the area plan land use maps (*Eastern Riverside County Land Use Plan*). LU 20.1 Require that structures be designed to maintain the environmental character in which they are located. LU 20.2 Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance. LU 20.3 Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use. LU 20.4 Ensure that development does not adversely impact the open space and rural character of the surrounding area.	Project would not be consistent on the 40 acre parcel under the jurisdiction of the County of Riverside.	The 40 acre parcel (APN: 810-110-007) is under the County of Riverside's jurisdiction. It is staff's opinion that the proposed project on the 40 acre parcel would conflict with county land use policies LU 20.1, LU 20.2, and LU 20.4 when considering, in synopsis, the following. The eastern Chuckwalla Valley is characterized by undisturbed desert open space and wilderness, distinctive flora such as creosote bush scrub and Joshua tree, sand dunes, and has several desert dry wash and unvegetated ephemeral dry wash areas. Various mountain ranges with rugged ridges and angular forms define the valley. Several high voltage electric transmission lines cross the area (see attached **Land Use Figure 3**; also see	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
	LU 20.5 Encourage parcel consolidation. LU 20.6 Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character.		**Visual Resources Figure 1**, **Visual Resources Figure 4A**, and **Visual Resources Figure 5A** in the **VISUAL RESOURCES** section of the RSA). The proposed Palen Solar Power Project is a utility-scale solar thermal electric generating facility generating at total capacity 500 MW that would cover a 40 acre parcel under the County of Riverside's jurisdiction, and an additional approximate 2,930 acres of federal land managed by the Bureau of Land Management. The project is to have two power generating units (unit 1 and unit 2), two 120-foot tall air cooled condensers, a 30-foot tall cooling tower, a storage tank for reverse osmosis concentrate, a bioremediation/land farming area for heat transfer fluid (HTF) contaminated soil, piping loops arranged in parallel groups, a central internal switchyard, an office building, warehouse and maintenance building, a parking lot, other support facilities, and solar parabolic trough arrays (parabolic mirrors). The project also includes the installation of chain link fencing and Desert tortoise fencing around the perimeter of the site for security and protection of sensitive biological resources, and a 30-foot tall wind fence that would be	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
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			installed along the western and eastern borders of the individual development areas (see attached **Land Use Figure 4**). The proposed project would convert over 4.5 square miles of naturally-appearing desert plain to an industrial looking facility characterized by complex, geometric forms and lines and industrial surfaces that are dissimilar to the surrounding natural landscape character. Much of the project site would be covered with arrays of parabolic mirrors. **Visual Resources Appendix Attachment 2A and 2B** present images of the type of solar collecting arrays that would be utilized for the PSPP. The proposed project would introduce an unnatural and manufactured appearance to a relatively flat, largely undeveloped portion of the Colorado Desert in the Chuckwalla Valley between the Palen Mountains and U.S. Interstate 10 in eastern Riverside County. The unit 1 and unit 2 power blocks and solar field areas total approximately 2,760 acres. The proposed project's structures would not maintain the environmental character of the eastern Chuckwalla Valley (see attached **Land Use Figure 2**).	

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			Staff contacted Raymond Juarez, Urban Regional Planner IV, Riverside County Transportation and Land Management Agency, Planning Department on August 30, 2010. Mr. Juarez has been designated by the Director of the Riverside County Transportation and Land Management Agency, Planning Department as the contact person for the California Energy Commission regarding solar energy projects. Mr. Juarez informed staff that per the County regulations, the proposed Palen solar project would not conform to the county's "Open Space–Rural" land use policies. The County is in the process of updating the General Plan which includes revising the general plan land use designation on the project site to allow solar energy generation facilities (CEC2010L). The applicant docketed a letter from Bob Lyman, Regional Office Manager, Desert Permit Assistant Center, County of Riverside Transportation and Land Management Agency which states "*After researching the above referenced parcel - I have found it to be compatible with the proposed land use, a solar generating plant. The parcel currently has the land use designation of OS-RUR - the Planning*	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
			Director has determined that a solar facility is compatible. Zoning for the subject parcel is W-2 and is compatible with a solar facility. If the proposed project was to be processed through the County of Riverside, a land use entitlement would be required" (SOLAR MILLENNIUM2010i). Approximately 2,930 acres of the project site would be on federal land administered by the BLM. The county's "Open Space–Rural" general plan land use designation and policies have limited applicability to this acreage. Local law can be considered applicable only to the extent it does not result in a land use which conflicts with the federally designated land use (Kleppe v New Mexico, 426 U.S. 529, 543, 96 S. Ct. 2285, 2293, 49 L.Ed.2d 34 (1976); United States v. City of Pittsburg, 661 F.2d 783, 785 (9th Cir. 1981); Ventura County, 601 F.2d at 1083). (JURIST1985, pg.1-4). The land is designated by the CDCA Plan as "Multiple-Use Class M" (Moderate Use). This class allows for energy and utility development in accordance with federal, state, and local law.	
Eastern Riverside County Desert Areas (Non-Area Plan)	The intent of the land use plan is to preserve the unique and spectacular open space character of this desert region, and to maintain those existing rural and mineral resource land	Project would not be consistent on the 40 acre parcel under the	The 40 acre parcel identified as APN: 810-110-007 is under the County of Riverside's jurisdiction.	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
	uses scattered throughout the area. LU 30.1 preserve the character of the Eastern Riverside County Desert Areas through application of those land use designations reflected on Figure LU-6, Eastern Riverside County Land Use Plan (this figure is shown as **Land Use Figure 7**).	jurisdiction of the County of Riverside.	The 40 acre parcel is shown within the county's "Open Space-Rural" land use designation. The project is a utility-scale solar thermal electric generating facility (generating a total capacity of 500 MW) having two power generating units (unit 1 and unit 2), an office building, warehouse and maintenance building, a parking lot, other support facilities, piping loops arranged in parallel groups, a central internal switchyard, and solar parabolic trough arrays (parabolic mirrors) covering nearly three thousand acres that is relatively flat, largely undeveloped portion of the Colorado Desert in the eastern Chuckwalla Valley between the Palen Mountains and U.S. Interstate 10 in eastern Riverside County. The proposed project's use on the 40 acre parcel would be in conflict with the intent of the Eastern Riverside County Land Use Plan and its LU 30.1 policy. The County of Riverside is in the process of updating its General Plan (2008 General Plan Update). No changes in land use designations were noted with regard to the project area. The existing General Plan does not specifically	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	Policy and Strategy Descriptions			
			address the siting of utility-scale solar energy facilities and the County recognizes that policy conflicts may exist. The County is planning to address the siting of solar power plants and will clarify the definition of public utility uses in its General Plan update and in future revisions of the County code (SOLAR MILLENNIUM2009a, pg. 5.7-7). Approximately 2,930 acres of the project's facility footprint would be on federal land administered by the BLM. The county's General Plan land use designations and zoning have limited applicability to this acreage. Specific to this acreage, local law can be considered applicable only to the extent it does not result in a land use which conflicts with the federally designated land use (Kleppe v New Mexico, 426 U.S. 529, 543, 96 S. Ct. 2285, 2293, 49 L.Ed.2d 34 (1976); United States v. City of Pittsburg, 661 F.2d 783, 785 (9th Cir. 1981); Ventura County, 601 F.2d at 1083). (JURIST1985, pg.1-4). This acreage is designated by the CDCA Plan as "Multiple-Use Class M" (Moderate Use). This class allows for energy and utility development in accordance with federal, state, and local law.	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
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Riverside County Ordinance 348 Article III - Zoning Classifications	For the purpose of providing a uniform basis for zoning, zone classifications, referred to alternatively herein as zones, may be applied to the lands in the unincorporated area of the County of Riverside. The zone classifications are specifically set forth in subsequent articles of this ordinance to which reference should be made to determine all the uses permitted therein. When a use is not specifically listed as permitted or conditionally permitted in a zone classification, the use is prohibited unless, in circumstances where this ordinance empowers him to do to, the Planning Director makes a determination that the use is substantially the same in character and intensity as those uses permitted or conditionally permitted in the zone classification.			
Article XV W-2 Zone (Controlled Development Areas)	e. Public Utilities Uses. (1) Structures and installations necessary to the conservation and development of water such as dams, pipe lines, water conduits, tanks, reservoirs, wells and the necessary pumping and water production facilities. (2) Structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power and gas such as hydroelectric power plants, booster or conversion plants, transmission lines, pipe lines and the like. (3) Telephone transmission lines, telephone exchanges and offices. (4) Railroad, including the necessary facilities in connection therewith.	Project would be consistent.	The 40 acre parcel (APN: 810-110-007) within the project area is under the County of Riverside's jurisdiction and is zoned "W-2 Zone" (Controlled Development Areas) (see **Land Use Figure 8**). The W-2 Zone permits structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power. The proposed Palen project's use on the 40 acre parcel would be permitted by the county's zoning.	
Article XVb N-A Zone (Natural Assets)	a. Uses Permitted. (1) One-family dwellings, guest dwelling, automobile storage garages, accessory buildings.	Project would be consistent if the BLM approves a project-specific	The proposed project is a utility-scale solar thermal electric generating facility.	Condition of certification **LAND-1**

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
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	(2) Field and tree corps. (3) The grazing only of cattle, horses, sheep or goats, subject to restrictions. b. Uses Permitted Subject to Approval of a Plot Plan. The following uses are permitted, upon approval of a plot plan pursuant to Section 18.30, on parcels of land not less than 7200 square feet in size, with a minimum front yard depth of 20 feet and minimum side and rear yard depth of 10 feet: (1) Public utility substations. (2) Water wells and appurtenant pump houses. (3) Picnic grounds for day use only. (4) Museums and menageries, commercial and non-commercial. (5) An additional one family mobile home. (6) Churches, temples and other places of religious worship. c. Uses permitted by Conditional Use Permit. (1) Recreational vehicle parks. (2) Migrant agricultural worker mobile home parks. (3) Resort hotels. (4) Any mining operation which is exempt from the provisions of the California Surface Mining and Reclamation Act of 1975 and County Ordinance No. 555. (5) Rock crushing plants, aggregate washing, screening and drying facilities and equipment. (6) Extraction and bottling of well water including the incidental manufacturing of bottles only for use for the permitted extraction and bottling operation. (7) Golf courses with standard length fairways and customary appurtenant facilities, including club houses, restaurants, and retail shops. (8) Riding academies and stables, commercial and noncommercial. (9) Fishing lakes, commercial and	CDCA Plan amendment.	Approximately 2,930 acres of the project's site is federal land administered by the BLM. The County of Riverside has zoned the land "N-A" (see **Land Use Figure 8**). The proposed project's use on this acreage is a use not listed in the N-A Zone. The proposed project is a use staff has concluded would be inconsistent with the N-A Zone. However, staff recognizes that local ordinances can be considered applicable only to the extent they do not result in a land use which conflicts with the federally designated land use (JURIST1985, pg.1-4). This portion of the project site is located on federal land designated by the BLM as "Multiple-Use Class M." This class provides for energy and utility development in accordance to federal, state and local law. The proposed project is a use that would be consistent with the federal designated "Multiple-Use Class M" land use with approval of a CDCA Plan amendment by the BLM.	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
	noncommercial. (10) Outdoor film studios. (11) Airport or landing field. (12) Camps. (13) Guest ranch.			
Article XVIII General Provisions	Section 18.2a. Scope of Regulations. All land, building and structures in the unincorporated area of the County of Riverside shall be used only as hereinafter provided: a. Private Projects. (1) No land, building or structure shall be used, constructed, altered or maintained except in conformance with the provisions of this ordinance. (2) No use that requires a permit or approval of any kind under the provisions of this ordinance shall be established or operated until the permit or approval is finally granted and all required conditions of the permit or approval have been completed. (3) No use that requires a permit or approval of any kind under the provisions of this ordinance shall be established or operated in violation of, or contrary to, any of the terms and conditions of the granted permit or approval. (4) The term "private project" shall include those projects of local agencies which are subject to County regulation under Government Code Sections 53090 to 53095, and shall also include any project proposed to be established or operated on government lands if the project is not primarily for a governmental purpose unless the government agency involved has exclusive jurisdiction or the field of regulation has been preempted by law.	Project would be consistent.	The proposed project is a utility-scale solar thermal electric generating facility and is considered a "private project." The California Energy Commission has exclusive permitting authority over the proposed project in accordance with Public Resources Code section 25500 et sequences. In accordance with the provisions of section 25500, the California Energy Commission shall have the exclusive power to certify all sites and related facilities in the state, whether a new site and related facility or a change or addition to an existing facility. The issuance of a certificate by the commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law.	

LORS		Consistency Determination	Basis for Consistency or Inconsistency	Proposed Condition of Certification
Source	**Policy and Strategy Descriptions**			
Riverside County Ordinance 659 as amended ***Riverside County Code Establishing Development Impact Fees***	Establishes and sets forth policies, regulations, and fees relating to the funding and installation of public and fire facilities and the acquisition of open space and habitat necessary to address the direct and cumulative environmental effects generated by new development projects described and defined in this ordinance. It establishes the authorized uses of the fees collected. In order to assist in providing revenue to acquire or construct facilities, purchase regional parkland, and preserve habitat and open space. Development Impact Fees (DIF) shall be paid for each residential unit, development project, or a portion thereof to be constructed. Four categories of Fees are defined which are: Single Family Residential, Multi-Family Residential, Commercial, and Industrial. For each of these categories, the amount of the DIF will vary depending upon the location of the property upon which the development unit or a portion thereof will be constructed.	Project would be consistent as condition.	The applicant proposes to construct a utility-scale solar thermal facility on a 40 acre parcel under the County of Riverside's jurisdiction within Area Plan 9 - Desert Center/Coachella Valley Desert; section 7, Ordinance No. 659. The current Development Impact Fee amounts became effective on August 20, 2009. As identified in this ordinance, all new development bears its fair share of the cost to provide public facilities and services, and acquire and maintain the open space and habitat necessary to address the impacts caused by such development projects. The Palen project's acreage calculations would include all power block facilities and all primary paths of travel leading to the production plant area, including access roads, but not solar field maintenance roads. The fee calculation would not include the solar field's acreage.	Condition of certification **LAND-2**

Noise and Vibration

Applicable LORS	Description
Federal	
Occupational Safety & Health Act (OSHA): 29 U.S.C. § 651 et seq.	Protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. 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.
U.S. Environmental Protection Agency (USEPA)	Guidelines are available from the U.S. Environmental Protection Agency (USEPA) to assist state and local government entities in developing state and local LORS for noise. Because there are existing local LORS that apply to this project, the USEPA guidelines are not applicable. There are no federal laws governing off-site (community) noise. The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to 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 vibrational decibel (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.

Applicable LORS	Description
State	
California Occupational Safety & Health Act (Cal-OSHA): 29 U.S.C. § 651 et seq., Cal. Code Regs., tit. 8, §§ 5095-5099	The California Occupational Safety and Health Administration (Cal-OSHA) has promulgated occupational noise exposure regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards. 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 of California, Office of Noise Control, prepared the Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. This model also defines a simple tone, or “pure tone,” as one-third octave band sound pressure levels that can be used to determine whether a noise source contains annoying tonal components. The Model Community Noise Control Ordinance further recommends that, when a pure tone is present, the applicable noise standard should be lowered (made more stringent) by 5 A-weighted decibels (dBA).

Applicable LORS	Description
Local	
Riverside County General Plan, Noise Element	The project is located within Riverside County. The Noise Element of the Riverside County General Plan (Riverside County 2007) and the Riverside County Noise Ordinance (Riverside County 2008) apply to this project. The County Noise/Land Use Compatibility Guidelines, provided in the Noise Element, are used to evaluate potential noise impacts and provide criteria for environmental impact findings and conditions for project approval. Land use compatibility defines the acceptability of a land use in a specified noise environment. For residential land uses, these guidelines categorize noise levels of up to 60 dBA day/night average sound level (Ldn) or CNEL as “normally acceptable” and up to 70 dBA Ldn or CNEL as “conditionally acceptable”.
Riverside County Noise Ordinance, Ordinance 847 (Regulating Noise)	The Noise Ordinance allows for different levels of acceptable noise depending upon land use. Section 4 of Ordinance No. 847 (Regulating Noise) limits noise on any property that causes the exterior noise level on any other occupied property to 55 dBA during the daytime hours and 45 dBA during the nighttime hours, for noise-sensitive receptors within a very low density rural area, such as the area surrounding the project site. This Noise Ordinance also limits the hours of construction activities to the hours of 6:00 a.m. to 7:00 p.m., June through September, 6:00 a.m. to 6:00 p.m., October through May, Mondays through Fridays, and to 9:00 a.m. to 5:00 p.m. on Saturdays.

POWER PLANT EFFICIENCY

No federal, state, local, or county laws, ordinances, regulations and standards (LORS) apply to the efficiency of this project.

POWER PLANT RELIABILITY

No federal, state, local, or county laws, ordinances, regulations and standards (LORS) pertain to the reliability of this project.

Public Health and Safety

Applicable LORS	Description
Federal	
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	This act requires new sources that emit more than 10 tons per year of any specified Hazardous Air Pollutant (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 Health and Safety Code Sections 44300 et seq.	Air Toxics Hot Spots Program requires participation in the inventory and reporting program at the District level.
California Health and Safety Code Sections 44360 - 44366	Air Toxics Hot Spots Information and Assessment Act requires that based on results of an HRA conducted per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels.
California Public Resource Code section 25523(a); Title 20 California Code of Regulations (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 toxic air contaminants (TACs).
Local	
South Coast Air Quality Management District (SCAQMD) Rule 402	Prohibits the discharge of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public; endanger the comfort, repose, health or safety of the public; or cause injury or damage to business or property.
SCAQMD Rule 1401	Discusses new source review for air toxics; specifies limits for maximum individual cancer risk, cancer burden, and noncancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants listed in Table I of the rule.
SCAQMD Rule 1470	Establishes fuel requirements, operating requirements and emission standards for stationary diesel-fueled internal combustion engines greater than 50 brake-horsepower.

Socioeconomics and Environmental Justice

Applicable Law	Description
State	
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 reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

SOIL AND WATER RESOURCES

FEDERAL

- **Clean Water Act (CWA) of 1977 (Including 1987 Amendments) Sections 401, 402 and 404**

The primary objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand, total suspended solids, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

- **Clean Water Act Section 401**

Section 401 of the CWA requires certification from the CRBRWQCB that the proposed project is in compliance with established water quality standards. Section 401 provides the SWRCB and the CRBRWQCB with the regulatory authority to waive, certify, or deny any proposed federally permitted activity, which could result in a discharge to waters of the State. To waive or certify an activity, these agencies must find that the proposed discharge will comply with state water quality standards. According to the CWA, water quality standards include beneficial uses, water quality objectives/criteria, and compliance with the EPA's anti-degradation policy.

No license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Under the CWA, USACE Section 404 permits are subject to CRBRWQCB Section 401 Water Quality Certification (Title 23 CCR Sections 3830 through 3869). As such, a determination of "federal waters" under Section 404 is required by the USACE. The ephemeral drainages on the Site were found not to conform to the requirements for designation as jurisdictional waters of the U.S. The ephemeral drainages on the Site were found not to conform to the requirements for designation as jurisdictional waters of the U.S. (S. Sanders, 2010)

While there is not a direct requirement under a 404 jurisdiction, the CRBRWQCB has authority under Porter-Cologne to regulate discharge of waste to waters of the state. The definition of the waters of the state is broader than that for waters of the U.S. in that all waters are considered to be a water of the state regardless of circumstances or condition. The term "discharge of waste" is also broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact waters of the state relative to implementation of Section 401 of the CWA.

Porter-Cologne authorizes the CRBRWQCB to regulate discharges of waste and fill material to waters of the state, including “isolated” waters and wetlands, through the issuance of waste discharge requirements (WDRs). Under Porter-Cologne all parties proposing to discharge waste that could affect the quality of waters of the state, other than into a community sewer system, shall file with the appropriate CRBRWQCB a Report of Waste Discharge (ROWD) containing such information and data as may be required by the CRBRWQCB. As such, the Project has filed a ROWD for evaluation of 401 water quality impacts and in association with the proposed LTU and surface impoundments.

- **Clean Water Act Section 402**

Direct and indirect discharges and stormwater discharges into waters of the United States must be made pursuant to a NPDES permit (CWA Section 402). NPDES permits contain industry-specific, technology-based limits and may also include additional water quality-based limits, and establish pollutant-monitoring requirements. A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards.

In 1987, the CWA was amended to include a program to address stormwater discharges for industrial and construction activities. Stormwater discharge is covered by an NPDES permit, either as an individual or general permit. The Colorado River Basin RWQCB administers the NPDES permit program under the CWA in the Project area. Appendix L of the AFC provides a preliminary construction DESCP (Solar Millennium 2009a).

- **Clean Water Act Section 404**

Activities resulting in the dredging or filling of jurisdictional waters of the U.S. require authorization under a Section 404 permit issued by the USACE. The USACE may grant authorization under either an individual permit or a nationwide permit (NWP) to address operations that may affect the ephemeral washes on the Project site. Section 404 permits are also subject to CWA Section 401 water quality certification through the CRBRWQCB.

An evaluation for jurisdictional waters on the Project site was performed by the Applicants. The ephemeral drainages on the Site were found not to conform to the requirements for designation as jurisdictional waters of the U.S. Discussions with the USACOE indicated that the drainages would not be considered jurisdictional waters of the U.S. (S. Sanders, 2010)

- **The U.S. Bureau of Reclamation, Colorado River – Proposed Accounting Surface Rule, 73 Federal Register 40, 916 (July 16, 2008) (subsequently withdrawn)**

The Consolidated Decree of the United Sates Supreme Court in Arizona vs. California, 547 U.S. 150 recognized that consumptive use of water from the Colorado River can occur by groundwater withdrawal. Under this decree, users within the lower Colorado River Basin (which includes the Project) can divert

tributary flow before it reaches the Colorado River. Once it reaches the river, entitlements are required for diversions. Wilson and Owen-Joyce and Owen-Joyce and others proposed the “river aquifer”, which is hydraulically connected to the Colorado River, and the “accounting surface”, which is defined as groundwater levels that would occur should the Colorado River be the only source of groundwater in the aquifer. Water levels higher than the accounting surface indicate recharge from tributary water sources.

Wells drawing water from the river aquifer (or water below the accounting surface) draw water from the Colorado River, and as such need to be accounted in the consumptive use of the river. In cases where water is drawn from the river aquifer, an entitlement is required from the USBR. The USBR proposed the accounting surface rule to eliminate the unlawful use of Colorado River on July 16, 2008 in the Federal Register (73 Federal Regulation 40,916). The USBR is currently preparing a new proposed rule.

The Project is proposing to use annually about 300 afy of groundwater from an onsite source for operational processes, including mirror washing, process makeup, equipment cooling, dust suppression and potable uses. Because groundwater is the only source of water for the proposed Project, if the proposed rule is established and the Applicant is found to be using Colorado River water based on the proposed rule the applicant will be required to obtain an entitlement to the groundwater. Currently, a preliminary timeline for final implementation of the accounting surface rule is Summer 2011.

STATE

The administering agencies for the State LORS are the Energy Commission, the State Water Resources Control Board (SWRCB), and the CRBRWQCB.

- **State of California Constitution Article X, Section 2**

Article X, Section 2 prohibits the waste or unreasonable use of water, regulates the method of use and method of diversion of water and requires all water users to conserve and reuse available water supplies to the maximum extent possible. The project’s use of dry cooling will significantly reduce potential water use and prohibit waste and unreasonable use of groundwater.

- **California Storm Water Permitting Program**

California Construction Storm Water Program. Construction activities that disturb one acre or more are required to be covered under California’s General Permit for Discharges of Storm Water Associated with Construction Activity, Water Quality Order 99-08-DWQ (General Construction Permit CAS 000002).

Activities subject to permitting include clearing, grading, stockpiling, and excavation. The General Construction Permit requires the development and implementation of a SWPPP that specifies BMPs that will reduce or prevent construction pollutants from leaving the site in stormwater runoff and will also

minimize erosion associated with the construction project. The SWPPP must contain site map(s) that show the construction site perimeter; existing and proposed structures and roadways; stormwater collection and discharge points, general topography both before and after construction; and drainage patterns across the site. Additionally, the SWPPP must describe the monitoring program to be implemented. The Project also will prepare a DESCP to meet

CEC requirements (Appendix L). The content of a DESCP is very similar to a SWPPP, but the DESCP covers both construction and operation in one document whereas separate SWPPPs are prepared for construction and operation.

California Industrial Storm Water Program. Industrial activities with the potential to impact stormwater discharges are required to obtain a NPDES permit for those discharges. In California, an Industrial Storm Water General Permit, Order 97-03-DWQ (General Industrial Permit CAS 000001) may be issued to regulate discharges associated with ten broad categories of industrial activities, including electrical power generating facilities. The General Industrial Permit requires the implementation of management measures that will protect water quality. In addition, the discharger must develop and implement a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce stormwater pollution described. The monitoring plan requires sampling of stormwater discharges during the wet season and visual inspections during the dry season.

A report documenting the status of the program and monitoring results must be submitted to the CRBRWQCB annually by July 1. The General Industrial Permit, which requires the development and implementation of a SWPPP, is required for the Project's operations phase. At the present time, the facility does not have a Standard Industrial Classification (SIC) code that would require compliance with the California's Industrial Storm Water Program.

- **California Water Code**

Section 461. Stipulates that the primary interest of the people of the State of California is the conservation of all available water resources and requires the maximum reuse of reclaimed water as an offset to using potable resources.

There are no plans for the Project to use reclaimed water. However, the Plant will be developed to minimize water usage and recycle water where appropriate. Dry cooling has been proposed for the project, and process makeup water will be recycled for a savings of about 150 afy. Additional water use mitigation measures are proposed as part of the project and outlined in Section 5.17.4 of the AFC.

Section 1200 "Water Rights." All water in California falls within one of three categories: surface water, percolating groundwater, or "subterranean streams that flow through known and definite channels." California's water rights law is a hybrid system in that the use of certain types of water requires a permit from the

SWRCB, while other types of uses are governed by common law. Only surface water and subterranean stream water are within the permitting jurisdiction of the SWRCB. Since 1914, appropriation of those waters has required a SWRCB permit, and is subject to various permit conditions.

Interstate water courses (such as the Colorado River) have additional contract requirements that are the equivalent of permits. For example, use of Colorado River water requires a contract with the Secretary of the Interior (through the Bureau of Reclamation).

Pre-1914 appropriative and riparian rights do not require a permit. Riparian rights are correlative rights of equal priority among all riparian right holders. The place of use of such water is limited to riparian property (property that is contiguous to a watercourse) that has not had its riparian rights severed. Riparian rights are senior to any appropriative rights, and may not be separated from the riparian parcel and used elsewhere.

Groundwater can be (a) the underground portion of a surface water course (subject to the same rights/permits as the affiliated water course); (b) a wholly underground water course which is treated like a water course; or (c) percolating groundwater. Water subject to appropriation is defined in Water Code Section 1201, as "all water flowing in any natural channel," except water that is or may be needed for use upon riparian land or water that is otherwise appropriated. The SWRCB's authority over groundwater extends only to the underground portion of a surface stream and to the water in un-appropriated subterranean streams that flow through known or defined channels, except as it is or may reasonably be needed for useful and beneficial purposes upon lands riparian to the channel through which it is flowing. The traditional test to establish SWRCB jurisdiction over groundwater was whether there is sufficient evidence of bed and banks and water flowing along a line of a surface stream (Sax 2002).

Recent case law has redefined the boundaries of an underground stream to mean the bedrock bottom and side boundaries that are materially less permeable than the alluvium holding groundwater found within an alluvial valley across which flows a surface stream. If there is insufficient evidence to support a finding that the groundwater fits this definition, the SWRCB has no jurisdiction and no permit is required to appropriate the water.

Percolating groundwater has no SWRCB permit requirement and supports two kinds of rights: (a) overlying rights, a correlative right of equal priority shared by all who own overlying property and use groundwater on the overlying property; and (b) groundwater appropriative rights for use of the overlying property or on overlying property for which the water rights have been severed. The right to use groundwater on property that is not as an overlying right is junior to all overlying rights, but has priority among other appropriators on a first in time use basis. Overlying users cannot take unlimited quantities of water without regard to the

needs of other users. Surplus groundwater may be appropriated for use on non-overlying lands, provided such use will not create an overdraft condition.

Riparian water rights, groundwater rights and appropriative rights are all subject to modification to some degree if there is a basin-wide adjudication, which proceeding can be commenced before the SWRCB as an adjudicative body (not a permitting role) or before a Court. In adjudication, unused riparian rights and unused overlying rights can be subordinated to appropriative rights.

Water rights in California can be held by any legal entity. Thus the owner can be an individual, related individuals, non-related individuals, trusts, corporations and/or government agencies. Water rights are considered real property. Riparian rights and overlying groundwater rights are lost if severed from the land, while appropriative rights can be preserved and transferred to other properties. Transfers of water for use elsewhere are permissible without transfers of water rights, subject to many other conditions and approvals, including a "non-injury" to other water rights holders test, assessment of environmental impacts, and for post 1914 appropriative rights, SWRCB approval of any change in place of use, diversion point and/or purpose of use.

The California Water Code allows any local public agency that provides water service whose service area includes a groundwater basin or portion thereof that is not subject to groundwater management pursuant to a judgment or other order, to adopt and implement a groundwater management plan (California Water Code Sections 10750 et. seq.) Groundwater Management Plans often require reports of pumping and some restrictions on usage. There is no Groundwater Management Plan for the CVGB listed on the DWR website on Groundwater Management Plans.

The California Legislature has found that by reason of light rainfall, concentrated population, the conversion of land from agricultural to urban uses and heavy dependence on groundwater, the counties of Riverside, Ventura, San Bernardino and Los Angeles have certain reporting requirements for groundwater pumping. Any person or entity that pumps in excess of 25 af of water in any one year must file a "Notice of Extraction and Diversion of Water" with the SWRCB. (See Water Code Sections 4999 et. seq.) The Project would be subject to this requirement since it is located in Riverside County and will require more than 25 afy. Condition of Certification **SOIL&WATER-15** would ensure the applicant complies with this requirement.

The Project is in Riverside County and the Chuckwalla Valley has no perennial streams. The Project site is located on BLM land that overlies the CVGB, which has a surface area of about 822,000 acres. A method was developed by the USGS, in cooperation with the USBR, to identify groundwater wells outside the flood plain of the lower Colorado River that yield water that will be replaced by water from the river. Wells placed into the groundwater beneath the Project site that extract groundwater may be considered as drawing water from the Colorado

River and require an entitlement to extract groundwater. The specific method to determine whether wells draw water from the Colorado River (referred to as the accounting surface) has not been promulgated by the USBR. Entitlements to extract and use the groundwater beneath the site are granted by the USBR through their designated representative in California, the Colorado River Board of California. After eligibility for groundwater extraction has been approved by the USBR, a contract must be established with the City of Needles to acquire the water. In California, the City of Needles monitors the use of water extracted from the river aquifer and is the designated contracting agent for the USBR.

- **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et. seq. requires the SWRCB and the nine RWQCBs to adopt water quality standards to protect State waters. Those standards include the identification of beneficial uses, narrative and numerical water quality criteria, and implementation procedures. Water quality standards for the proposed project area are contained in the Water Quality Control Plan for the Colorado River Basin Region (Basin Plan), which was adopted in 1994 and was amended in 2006. This plan sets numeric and/or narrative water quality criteria controlling the discharge of wastes to the State's waters and land.

The Project applicant proposes to construct a LTU as part of the facility. The LTU will be used to receive, temporarily store, and treat soil impacted with heat transfer fluid (HTF). The Project will comply with Title 23 CCR Division 3, Chapters 9 and 15 regarding the establishment of requirements for waste discharge and reporting along with requirements specifying conditions for the protection of water quality. Under Chapter 9, the CRBRWQCB is required to issue a ROWD for discharges of waste to land pursuant to the Water Code. The report requires the submittal of information regarding the proposed discharge and waste management unit design and monitoring program. WDRs issued by the CRBRWQCB provide construction and monitoring requirements for the proposed discharge. Chapter 15 outlines siting, construction, and monitoring requirements for waste discharges to land for landfills, surface impoundments, LTUs, and waste piles. The Chapter provides closure and post-closure maintenance and monitoring requirements for Class II designated waste facilities that are applicable to this project.

The Project will also comply with CCR Title 27 Division 2, Chapter 3. Section 20377 provides guidance for LTUs, referencing general criteria (Section 20320), precipitation, and drainage control (Section 20365) and seismic design requirements (Section 20370). Section 20250 stipulates operational and maintenance procedures to minimize mobilization of waste materials. Additional information regarding the HTF for this Project is discussed in Section 5.6 – Hazardous Materials.

Section 13050. Surface waters (including ephemeral washes) that are affected by the Project are waters of the State and are subject to State requirements and

the CRBRWQCB' authority to issue WDRs for construction and industrial stormwater activities.

Section 13260 et seq. This section requires filing with the appropriate CRBRWQCB a ROWD for activities in which waste is discharged that could affect the water quality of the State. The report shall describe the physical and chemical characteristics of the waste and include the results of all tests required by regulations adopted by the board, any test adopted by the Department of Toxic Substances Control (DTSC) pursuant to Section 25141 of the Health and Safety Code for extractable, persistent, and bioaccumulative toxic substances in a waste or other material, and any other tests that the SWRCB or CRBRWQCB may require. In accordance with Water Code Section 13263, the [State Water Board / Regional Water Board] hereby "prescribes" the waste discharge requirements as adopted by the California Energy Commission for the Project. Because the Energy Commission has exclusive permitting authority over the project under Public Resources Code section 25500, the State Board "prescribes" the waste discharge requirements for the sole purpose of authorizing the Regional Board to enforce them and undertake associated monitoring, inspection, and annual fee collection as if the waste discharge requirements were adopted by the Board.

Section 13173 (Designated Wastes). Traditionally the State Water Resources Control Board along with the applicable California Regional Water Quality Control Board (hereafter "Water Boards") develop, adopt, and enforce waste discharge requirements for facilities that discharge waste. When such a facility is an electrical generating facility under the Energy Commission's jurisdiction, however, the Energy Commission permit takes the place of the Water Boards' permit and the WDRs are folded into the Energy Commission's conditions of certification. Nevertheless, Energy Commission staff believe it is important to have the Water Boards retain the authority to enforce these requirements, along with the authority to monitor, inspect, and collect an annual fee, because they are state and local agencies with expertise in this subject area. Therefore, staff recommends that the Energy Commission delegate this authority the Water Boards pursuant to title 20, California Code of Regulations, section 1770(b), and has provided language to that effect in Condition of Certification **SOIL&WATER-6.** The Water Boards may also take action in tandem with delegation by the Energy Commission to prescribe the requirements adopted by the Energy Commission to ensure that their agents are fully informed and authorized to enforce the WDRs in the Commission's decision.

This section defines designated waste as either: a) hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Section 14142 of the Health and Safety Code, or, b) Non-hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or could reasonably be expected to

affect beneficial uses of the waters of the state contained in the appropriate state water quality control plan.

As noted above, the Project applicant proposes to construct an LTU to treat HTF-impacted soils. In 1995, the California DTSC determined that soils containing HTF up to 10,000 mg/kg were considered nonhazardous. However, recently the DTSC indicated that any determination of waste classification needs to be site specific. Wastes containing HTF are discussed in detail in Section 5.6, Hazardous Wastes.

Section 13240 et seq. (Water Control Plan). The Basin Plan for the Colorado River Basin Region establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and ground waters in the region. The Basin Plan describes implementation plans and other control measures designed to ensure compliance with statewide plans and policies and provide comprehensive water quality planning. The following chapters are applicable to determining appropriate control measures and cleanup levels to protect beneficial uses and to meet the water quality objectives: Chapter 2, Beneficial Uses; Chapter 3, Water Quality Objectives; and the sections of Chapter 4, Implementation, entitled “Point Source Controls” and “Non-Point Source Controls.”

- Beneficial Uses: Chapter 2 of the Basin Plan describes beneficial uses of surface and ground waters. Beneficial uses of surface waters for the Chuckwalla Valley are not listed in the Basin Plan. The beneficial uses of ground waters of the Chuckwalla Valley Hydrologic Unit (717.00) are: municipal and domestic supply, industrial service supply, and agricultural supply.
- Water Quality Objectives: Region-wide numeric and narrative objectives for general surface waters are described in Chapter 3 of the Basin Plan under the “General Surface Water Quality Objectives” and region-wide objectives for groundwater under the “Ground Water Objectives.”
- Waste Discharge Requirements: Chapter 4 of the Basin Plan describes “Point-Source Controls” for wastewater reclamation and reuse, stormwater, and septic systems. The discussion of “Non-Point Source Controls” in the Basin Plan describes the authority given to the CRBRWQCB to certify projects for CWA Section 401 permits.

Section 13243. Under this section, the Regional Water Boards are granted authority to specify conditions or areas where the discharge of waste will not be permitted. The discharge of designated waste can only be discharged to an appropriately designed waste management unit.

Section 13263 (Waste Discharge Requirements). The CRBRWQCB regulates the discharges of fill material, including structural material and/or earthen wastes into wetlands and other waters of the State through WDRs. The CRBRWQCB considers WDRs necessary to adequately address potential and planned impacts

to waters of the State and to require mitigation for these impacts to comply with the water quality standards specified in the Basin Plan. Condition of Certification **SOIL&WATER-6** would ensure the applicant complies with this requirement.

WDRs from the CRBRWQCB are required for the LTU that will be used to treat (through bioremediation techniques) HTF-impacted soil and surface impoundments that are used to treat wastewater (excluding sanitary wastes) from Project operations. The Project applicant has submitted an ROWD application to the CRBRWQCB.

Section 13271 (Discharge Notification). CWC section 13271 requires any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the state, or discharge or deposited where it is, or probably will be, discharged in or on any waters of the state to notify the Office of Emergency Services (OES) of the discharge as specified in that section. The OES then immediately notifies the appropriate regional board and the local health officer and administrator of environmental health of the discharge.

Section 13550. "The Legislature hereby finds and declares that the use of potable domestic water for non-potable uses, including, but not limited to, cemeteries, golf courses, parks, highway, landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the State Board." This section requires the use of recycled water for industrial purposes subject to recycled water being available and upon a number of criteria including: provisions that the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.

Section 13551. This section prohibits a person or public agency, including a State agency, city, county, city and county, district, or any other political subdivision of the State, from using water from any source of quality suitable for potable domestic use for non-potable uses if suitable recycled water is available as provided in Section 13550.

Section 13552. This section specifically identifies the use of potable domestic water for cooling towers as an unreasonable use of water within the meaning of Article X Section 2 of the California Constitution, if suitable recycled water is available and the water meets the requirements set forth in Section 13550.

Section 13571. Requires that anyone who constructs, alters, or destroys a water well, cathodic protection well, groundwater monitoring well, or geothermal heat exchange well, file a well completion report with the California Department of Water Resources (CDWR). With no nearby sources of water available and no existing water supply wells on the Project site, a water supply well and

groundwater monitoring wells will be constructed at the Site. These wells are required as part of the evaluation of water resources for the Project. A well completion report will be filed with DWR for each well that is constructed. Measures will be undertaken to protect the groundwater wells (whether for water supply or for monitoring purposes) on the Project site through the use of physical barriers (e.g., fencing, traffic bollards, etc.). In the event that an existing well is altered or destroyed, a well completion report will be filed with the DWR.

California Code of Regulations

Title 22, Article 3, Sections 64400.80 through 64445. This section requires monitoring for potable water wells, defined as non-transient, non-community water systems (serving 25 people or more for more than six months); the Project will employ approximately 130 workers during operations. Regulated wells must be sampled for bacteriological quality once a month and the results submitted to the California Department of Health Services (DHS). The wells must also be monitored for inorganic chemicals once and organic chemicals quarterly during the year designated by the DHS. DHS will designate the year based on historical monitoring frequency and laboratory capacity. Condition of Certification **SOIL&WATER-15** would ensure the applicant complies with this requirement.

Title 23, Division 3, Chapter 9. This chapter requires the CRBRWQCB to issue a report of waste discharge for discharges of waste to land pursuant to the Water Code. The report requires submittal of information regarding the proposed discharge and waste management unit design and monitoring program. WDRs issued by the CRBRWQCB provide construction and monitoring requirements for the proposed discharge. The SWRCB has adopted general waste discharge requirements (97-10-DWQ) for discharge to land by small domestic wastewater treatment systems.

Traditionally the State Water Resources Control Board along with the applicable California Regional Water Quality Control Board (hereafter "Water Boards") develop, adopt, and enforce waste discharge requirements for facilities that discharge waste. When such a facility is an electrical generating facility under the Energy Commission’s jurisdiction, however, the Energy Commission permit takes the place of the Water Boards’ permit and the WDRs are folded into the Energy Commission’s conditions of certification. Nevertheless, Energy Commission staff believe it is important to have the Water Boards retain the authority to enforce these requirements, along with the authority to monitor, inspect, and collect an annual fee, because they are state and local agencies with expertise in this subject area. Therefore, staff recommends that the Energy Commission delegate this authority to the Water Boards pursuant to title 20, California Code of Regulations, section 1770(b), and has provided language to that effect in Condition of Certification **SOIL&WATER-6**. The Water Boards may also take action in tandem with delegation by the Energy Commission to prescribe the requirements adopted by the Energy Commission to ensure that their agents are fully informed and authorized to enforce the WDRs in the Commission's decision.

With respect to onsite wastewater discharge, the CRBRWQCB adopted in 1984 “Guidelines for Sewage Disposal from Land Developments” that provides exclusion of on-site sanitary wastewater flows less than 5,000 gpd. Correspondingly, since each Power Unit will have a sanitary wastewater disposal system with a maximum capacity of 2,750 gpd the exclusion applies and the sanitary wastewater disposal system will be designed in accordance with County of Riverside requirements (see Section C.9.12.3).

Title 23, Division 3, Chapter 15. Regulates all discharges of hazardous waste to land that may affect water quality. Chapter 15 broadly defines a waste management area as “an area of land, or a portion of a waste management facility, at which waste is discharged.” Therefore, unless exempted, all discharges of hazardous waste to land that may affect water quality are regulated by Chapter 15. This chapter outlines siting, construction and monitoring requirements for waste discharges to land for landfills, surface impoundments, land treatment units, and waste piles. The chapter provides closure and post-closure maintenance and monitoring requirements for surface impoundments that are applicable to the Project.

Title 27, Section 2000 et seq. and Title 23, Section 2510 et seq. These sections include requirements for siting and minimum waste management standards for discharges of waste to land. Establishes monitoring and corrective action requirements for discharges to land, including spills and leaks and other unauthorized discharges. Requires, assurances of financial responsibility for closure and post-closure activities and corrective actions for all known or reasonably foreseeable releases.

As discussed above, the Project would employ a LTU to manage soils impacted by releases of HTF. Provisions of Title 27 CCR apply to designated and non-hazardous solid waste. Provisions of Title 23 apply to hazardous waste. CEC and CRBRWQCB staff are currently developing requirements for monitoring, mitigating, and reporting that will ensure compliance with these regulations and will include them as a condition of certification. Engineered alternatives that are consistent with Title 27 and Title 23 CCR performance goals may be considered for approval by the CRBRWQCB.

Section 20375 provides guidance for surface impoundments, including construction requirements (Table 4.1), operation, maintenance, and inspection. Section 20377 provides guidance for LTUs, referencing general criteria (Section 20320) and precipitation and drainage control (Section 20365) and seismic design requirements (Section 20370). The regulations stipulate operational and maintenance procedures to minimize mobilization of the waste materials (Section 20250).

- **State Water Resources Control Board Policies**

Anti-Degradation Policy (Resolution No. 68-16). Requires the CRBRWQCB, in regulating the discharge of waste, to: (a) maintain existing high quality waters of

the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than that described in State or Regional Water Boards policies; and (b) require that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters, must meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that: a) a pollution or nuisance will not occur and b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Power Plant Cooling Water Policy (Resolution No. 75-58). On June 19, 1975, the SWRCB adopted the Water Quality Control Policy on the Use and Disposal of Inland Waters used for Power Plant Cooling. The purpose of the policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for power plants that depend on inland waters for cooling. State policy encourages the use of wastewater for power plant cooling and sets the following order of preference for cooling purposes: 1) wastewater being discharged to the ocean; 2) ocean water; 3) brackish water or irrigation return flows; 4) inland waste waters of low total dissolved solids (TDS); and 5) other inland waters. The criteria for the selection of water delivery options involves economic feasibility; engineering constraints, such as cooling water composition and temperature; and environmental considerations such as impacts on riparian habitat, groundwater levels, and surface and subsurface water quality.

The Project will use dry-cooling methods and does not propose to use groundwater for power plant cooling. The project will use groundwater for mirror washing, auxiliary equipment cooling, process makeup, dust suppression, and potable supply.

Water Reclamation Policy (Resolution No. 77-01). Under this policy, the SWRCB and CRBRWQCBs shall encourage reclamation and reuse of water in water-short areas. Reclaimed water will replace or supplement the use of fresh water or better quality water.

Sources of Drinking Water Policy (Resolution No. 88-63). This policy designates all groundwater and surface waters of the States as potential sources of drinking water, worthy of protection for current or future beneficial uses, except where: (a) the total dissolved solids are greater than 3,000 milligrams per liter, (b) the well yield is less than 200 gallons per day (gpd) from a single well, (c) the water is a geothermal resource, or in a water conveyance facility, or (d) the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.

Policies and Procedures for Investigations and Clean-up and Abatement of Discharges Under CWC Section 13304 (Resolution No. 92-49). This policy

establishes requirements for investigation and cleanup and abatement of discharges. Under this policy, clean-up and abatement actions are to implement applicable provisions of Title 23 CCR Chapter 15, to the extent feasible. The policy also requires the application of Section 2550.4 of Chapter 15 when approving any alternative cleanup levels less stringent than background. It requires remediation of the groundwater to the lowest concentration levels of constituents technically and economically feasible, which must at least protect the beneficial uses of groundwater, but need not be more stringent than is necessary to achieve background levels of the constituents in groundwater.

Water Quality Control Policy for Recycled Water (Resolution No. 209-0011). The Recycled Water Policy is intended to promote sustainable local water supplies. The purpose of this Policy is to increase the use of recycled water from municipal wastewater sources that meets the definition in CWC Section 13050(n), in a manner that implements state and Federal water quality laws.

- **Public Resources Code**

Section 25300 et seq. In the 2003 "Integrated Energy Policy Report", consistent with SWRCB Policy No. 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy stating they would approve the use of "fresh inland" 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." As noted above, the Project does not propose to use groundwater for power plant cooling. The Project would use dry-cooling methods and does not propose to use groundwater for power plant cooling. The Project would use groundwater for mirror washing, auxiliary equipment cooling, process makeup, dust suppression, and potable supply *Section 25523(a).*

- **Project Compliance with State Water Policy**

The Energy Commission has five authoritative sources for statements of policy relating to water use in California applicable to power plants. They are the California Constitution, the Warren-Alquist Act, the Commission's restatement of the state's water policy in the 2003 Integrated Energy Policy Report ("IEPR"), the State Water Resources Control Board ("SWRCB" or "Board") resolutions (in particular Resolutions 75-58 and 88-63), and a letter from the Board to the CEC interpreting Resolutions 75-58 and 88-63 [collectively referred to as the state's water policies - see Genesis Solar Project (09-AFC-08)].

- **California Constitution**

California's interest in conserving water is so important to our thirsty state that in 1928, the common law doctrine of reasonable use became part of the state Constitution. Article X, section 2 calls for water to be put to beneficial use, and that "waste or unreasonable use or unreasonable *method of use* be prevented." (Cal. Const., art. X, § 2; emphasis added.) The article also limits water rights to reasonable use, including reasonable methods of use. (*Ibid*.) Even earlier in the

20th Century, a state Supreme Court case firmly established that groundwater is subject to reasonable use. (*Katz v. Walkinshaw* (1903) 141 Cal. 116.) Thus, as modern technology has made dry-cooling of power plants feasible, the Commission may regard wet-cooling as an unreasonable method of use of surface or groundwater, and even as a wasteful use of the state's most precious resource.

- **Warren-Alquist Act**

Section 25008 of the Commission's enabling statutes echoes the Constitutional concern, by promoting "all feasible means" of water conservation and "all feasible uses" of alternative water supply sources. (Pub. Resources Code § 25008.)

- **Integrated Energy Policy Report**

In the 2003 Integrated Energy Policy Report ("IEPR" or "Report"), the Commission reiterated certain principles from SWRCB's Resolution 75-58, discussed below, and clarified how they would be used to discourage use of fresh water for cooling power plants under the Commission's jurisdiction. The Report states that the Commission will approve the use of fresh water for cooling purposes only where alternative water supply sources or alternative cooling technologies are shown to be "'environmentally undesirable'" or "'economically unsound.'" (IEPR (2003), p. 41.) In the Report, the Commission interpreted "environmentally undesirable" as equivalent to a "significant adverse environmental impact" under CEQA, and "economically unsound" as meaning "economically or otherwise infeasible," also under CEQA. (IEPR, p. 41.) CEQA and the Commission's siting regulations define feasible as "capable of being accomplished in a successful manner within a reasonable amount of time," taking into account economic and other factors. (Cal. Code Regs., tit. 14, §15364; tit. 20, §1702, subd. (f).) At the time of publication in 2003, dry cooling was already feasible for three projects—two in operation and one just permitted. (IEPR, p. 39.)

- **State Water Resources Control Board Resolutions**

The SWRCB not only considers quantity of water in its resolutions, but also the quality of water. In 1975, the Board determined that water with total dissolved solids ("TDS") of 1,000 mg/l or less should be considered fresh water. (Resolution 75-58.) One express purpose of that Resolution was to "keep the consumptive use of fresh water for powerplant cooling to that *minimally essential*" for the welfare of the state. (*Ibid*; emphasis added.) In 1988, the Board determined that water with TDS of 3,000 mg/l or less should be protected for and considered as water for municipal or domestic use. (Resolution 88-63.)

REGIONAL AND LOCAL

- **Riverside County Ordinance Code, Title 13, Chapter 13.20 – Water Wells**

Section 13-.20.160 Well Logs. This section requires that a report of well excavation for all wells dug or bored for which a permit has been issued be submitted to the Riverside County Department of Environmental Health within 60 days after completion of drilling. DWR Form 188 shall satisfy this requirement as stipulated under California Water Code Section 13571.

Section 13.20.190 Water Quality Standards. This section requires that water from wells that provide water for beneficial use shall be tested radiologically, bacteriologically and chemically as indicated by the Riverside County Department of Environmental Health. Laboratory testing must be performed by a State of California-certified laboratory. The results of the testing shall be provided to the County Department of Environmental Health within 90 days of pump installation.

Section 13.20.220 Well Abandonment. This section provides that all abandoned wells shall be destroyed in such a way that they will not produce water or act as a channel for the interchange of water, and will not present a hazard to the safety and well-being of people or animals. Destruction of any well shall follow requirements stipulated in DWR Bulletin No.74-81, provided that at a minimum the top 50 feet shall be sealed with concrete, or other approved sealing material. Applications for well destruction must be submitted 90 days following abandonment of the well and in accordance with Section 14.08.170.

Section 13.20.240 Declaration of Proposed Reuse. Requires that any well that has not been used for a period of one year shall be properly destroyed unless the owner has filled a “Notice of Intent” with the health officer declaring the well out of service and declaring his intention to use the well again.

- **Riverside County Ordinance Code, Title 8, Chapter 8.124 – Sewage Discharge**

Section 8.124.030, General Requirements for an Approval and Construction Permit. The type, capacity, location, and layout of each private system shall comply with the rules and regulations of the health officer, and the WDRs of the CRBRWQCB. A private system shall be constructed and maintained on the lot which is the site of the building it serves, unless the health officer in his discretion authorizes a different location.

Section 8.124.050 Operation Permits. Each private system shall be managed, cleaned, regulated, repaired, modified and replaced from time to time by the owner or owner’s representatives, in accordance with the rules, regulations and other reasonable requirements of the health officer in conformity with the WDR

issued by the regional board and in a manner which will safeguard against and prevent pollution, contamination or nuisance.

- **Riverside County Title 15 Chapter 15, 24 Uniform Plumbing Code**

Section 15.24.010. Adopted by Reference,, Appendix K, Section K1 amended – Private Sewage Disposal – General. In certain areas of the County which have poor soils or other problems relative to sewage disposal, the sewage disposal system shall be installed and inspected before the building foundation inspection is made.

Section 15.24.010. Adopted by Reference, Appendix K, Section K6(i) amended – Disposal fields. Disposal fields, trenches, and leaching beds shall not be paved over or covered by concrete or any material that can reduce or inhibit any possible evaporation of the sewer effluent unless the area of the disposal fields, trenches, and leaching beds is increased by a minimum of 25%.

- **Riverside County Title 15 Chapter 15.80 Regulating Flood Hazard Areas and Implementing the National Flood Insurance Program**

This ordinance was developed to comply with Title 44 CFR Part 65 regarding requirements for the identification and mapping of areas identified as Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas. The ordinance is applicable to development within unincorporated areas of Riverside County and is integrated into the process of application for development permits under other county ordinances including, but not limited to, Ordinance Nos. 348, 369, 457, 460, and 555. When the information required, or procedures involved, in the processing of such applications is not sufficient to assure compliance with the requirements of Chapter 15.80, a separate application must be filed.

Flood insurance rate maps for the Project site or surrounding areas have not been prepared by FEMA. According to the Riverside County General Plan (Riverside County 2000) the Project site and surrounding lands do not lie within a 100-year or 500-year flood plain.

Traffic and Transportation

Applicable LORS	Description
Federal	
Title 49 Code of Federal Regulations (CFR) Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices A-G	Addresses safety considerations for the transport of goods, materials, and substances. Governs the transportation of hazardous materials including types of materials and marking of the transportation vehicles.
State	
California Vehicle Code (VC) Sections 353; 2500-2505; 31303-31309; 32000-32053; 32100-32109; 31600-31620; California Health and Safety Code Section 25160 et seq.	Regulates the highway transport of hazardous materials.
VC Sections 13369; 15275 and 15278	Addresses the licensing of drivers and the classification of licenses required for the operation of particular types of vehicles; also requires certificates permitting operation of vehicles transporting hazardous materials.
VC Sections 35100 et seq.; 35250 et seq.; 35400 et seq.	Specifies limits for vehicle width, height, and length.
VC Section 35780	Requires permits for any load exceeding Caltrans weight, length, or width standards on public roadways.
California Streets and Highways Code Section 117, 660-672	Requires permits for any load exceeding Caltrans weight, length, or width standards on County roads.
California Streets and Highways Code Sections 117, 660-670, 1450, 1460 et seq., and 1480 et seq.	Regulates permits from Caltrans for any roadway encroachment from facilities that require construction, maintenance, or repairs on or across State highways and County roads.
Local	
Riverside County General Plan Circulation Element	Specifies long-term planning goals and procedures for transportation infrastructure system quality.
Riverside County General Plan Circulation Element	Specifies LOS standards used to assess the performance of a street or highway system and the capacity of a roadway.
Riverside County Municipal Code Title 10, Chapter 10.08, Sections 10.08.010-10.08.180	Specifies limits and permit requirements for oversize loads.
Riverside County Municipal Code Title 12, Chapter 12.08, Sections 12.08.010-12.08.100	Specifies requirements for encroachment permits.

Transmission Line Safety and Nuisance

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" form (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
Riverside County General Plan, Noise Element	Establishes policies and programs to ensure that noise levels are appropriate to land uses.
Riverside County Noise Ordinance	Establishes performance standards for planned residential or other noise-sensitive land uses.
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.

Applicable LORS	Description
Electric and Magnetic Fields	
State	
GO-131-D, CPUC ”Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California”	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250-1258, “Fire Prevention Standards for Electric Utilities”	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

TRANSMISSION SYSTEM ENGINEERING

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), “Rules for Overhead Electric Line Construction,” formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance and operation or use of overhead electric lines and to the public in general.
- California Public Utilities Commission (CPUC) General Order 128 (GO-128), “Rules for Construction of Underground Electric Supply and Communications Systems,” formulates uniform requirements and minimum standards to be used for underground supply systems to ensure adequate service and safety to persons engaged in the construction, maintenance and operation or use of underground electric lines and to the public in general.
- The National Electric Safety Code, 1999 provides electrical, mechanical, civil and structural requirements for overhead electric line construction and operation.
- NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Council (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on Section I.A of the standards, “NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table” and on Section I.D, “NERC and WECC Standards for Voltage Support and Reactive Power”. These standards require that the results of power flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a

common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, their uncontrolled loss is not permitted (WECC 2006).

- North American Reliability Council (NERC) Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. With regard to power flow and stability simulations, while these Reliability Standards are similar to NERC/WECC Standards, certain aspects of the NERC/WECC Standards are either more stringent or more specific than the NERC Standards for Transmission System Contingency Performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
- California ISO Planning Standards also provide standards and guidelines to assure the adequacy, security and reliability in the planning of the California ISO transmission grid facilities. The California ISO Grid Planning Standards incorporate the NERC/WECC and NERC Reliability Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar to the NERC/WECC or NERC Reliability Planning Standards for Transmission System Contingency Performance. However, the California ISO Standards also provide some additional requirements that are not found in the WECC/NERC or NERC Standards. The California ISO Standards apply to all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a).
- California ISO/FERC Electric Tariff provides guidelines for construction of all transmission additions/upgrades (projects) within the California ISO controlled grid. The California ISO determines the “Need” for the proposed project where it will promote economic efficiency or maintain system reliability. The California ISO also determines the Cost Responsibility of the proposed project and provides an Operational Review of all facilities that are to be connected to the California ISO grid (California ISO 2007a).

Visual Resources

Applicable LORS	Description	Consistency (Assumes implementation of Conditions of Certification)
Federal		
California Desert Conservation Area (CDCA) Plan	PSPP is located within the California Desert Conservation Area Plan, which is the BLM Resource Management Plan applicable to the project site (USDOI, 1980, as amended). The CDCA Plan did not include Visual Resource Management (VRM) inventory or management classes. However, a BLM-approved Visual Resource Inventory (VRI) was conducted in 2005 for the Devers-Palo Verde 2 Transmission Line Project EIS/EIR, which covers the project site. The PSPP site is classified in the CDCA Plan as Multiple-Use Class (MUC) M (Moderate Use). Management of MUC M lands is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, live- stock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources, which permitted uses may cause. The CDCA Plan includes a table (Table 1), which illustrates the types of allowable land uses by MUC Class. The table specifically includes Electrical Power Generation Facilities including Wind/Solar facilities. Guidance provided under this section allows for the authorization of such facilities within MUC M lands in compliance with NEPA requirements. New major electric transmission facilities may be allowed only within designated utility corridors. Existing facilities within designated utility corridors may be maintained and	**Consistent**. Solar electrical generation plants are specifically allowed for under the Multiple Use Class (MUC) Class M Guidelines if NEPA requirements are met.

Applicable LORS	Description	Consistency (Assumes implementation of Conditions of Certification)
	upgraded or improved in accordance with existing rights-of-way or amendments to right-of- way grants.	
State		
State Scenic Highway Program	The California State Department of Transportation (Caltrans) identifies a state system of eligible and designated scenic highways which, if designated, are subject to various controls intended to preserve their scenic quality (Ca. Streets and Highways Code, Sections 260 through 263). Highway I-15 within the project viewshed is not listed as an eligible State Scenic Highway.	**Consistent**. Highway I-10 within the project viewshed is not an eligible or designated State scenic highway.
Local		
Riverside County Integrated Plan LU-4 Relating to Project Design	LU 4.1 Requires that new developments be located and designed to visually enhance, not degrade the character of the surrounding area through consideration of the following concepts: c. Require that an appropriate landscape plan be submitted and implemented for development projects subject to discretionary review.	**Consistent.** The Applicant does not propose to landscape the project site, and therefore would not submit a landscape plan for the project area. However, given the location of the project and the potential impacts to water and biological resources resulting from landscaping this location, staff concludes that this approach is appropriate.
	d. Require that new development utilize drought- tolerant landscaping and incorporate adequate drought-conscious irrigation systems.	**Consistent.** The Applicant does not propose any landscaping, and therefore will not require irrigation or unnecessarily use water in the desert.
	l. Mitigate noise, odor, lighting, and other impacts on surrounding properties.	**Consistent.** All outdoor lighting at the project site will be the minimum required to meet safety and security standards and all light fixtures will be hooded to eliminate any potential for glare effects and to prevent light from spilling off the site or up into the sky. In addition, the light fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not required. Condition of Certification **VIS-3** will be required.
	m. Provide and maintain landscaping in open spaces and parking lots.	**Consistent.** The project footprint, as proposed, includes no open space, and parking facilities would be minimal. Planting and maintaining landscaping in the parking area of

Applicable LORS	Description	Consistency (Assumes implementation of Conditions of Certification)
		PSPP, which would be inaccessible to the public, would require that water be used unnecessarily.
	n. Include extensive landscaping.	**Consistent.** Including extensive landscaping would not serve the project or surrounding viewers, and would require that water be used unnecessarily.
	o. Preserve natural features, such as unique natural terrain, drainage ways, and native vegetation, wherever possible, particularly where they provide continuity with more extensive regional systems.	**Consistent.** Preserving natural features on the project site was not considered possible. The land surface of the site will be cleared of vegetation and graded.
	p. Require that new development be designed to provide adequate space for pedestrian connectivity and access, recreational trails, vehicular access and parking, supporting functions, open space, and other pertinent elements.	**Not Consistent.** The project would not be accessible by pedestrians, recreationists, or general vehicular travel.
	LU 4.2 Require property owners to maintain structures and landscaping to a high standard of design, health, and safety through the following: c. Promote and support community and neighborhood based efforts for the maintenance, upkeep, and renovation of structures and sites.	**Consistent**. Applicant would maintain the appearance of the project and ensure proper maintenance practices.
County Scenic Corridors	LU 13.1 Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.	**Not Consistent.** The project would be located within the scenic vista views of the southern ridges of the Joshua Tree Wilderness and Palen McCoy Wilderness and the northeastern ridges of the Chuckwalla Mountains Wilderness.
	LU 13.3 Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County scenic highway corridors are compatible with the surrounding scenic setting or environment.	**Not Consistent.** The project is not compatible in design and appearance with scenic highway corridors. Riverside County has requested that Interstate 10 (I-10) be designated a State Scenic Highway, but Caltrans has not designated I-10 as either an Eligible or Officially Designated Scenic Highway. Therefore, Riverside County has designated I-10 to be a County Scenic Highway from SR-62 near Palm Springs to the California-Arizona border.

Applicable LORS	Description	Consistency (Assumes implementation of Conditions of Certification)
	LU 13.7 Require that the size, height, and type of on-premise signs visible from Designated and Eligible State and County Scenic Highways be the minimum necessary for identification. The design, materials, color, and location of the signs shall blend with the environment, utilizing natural materials where possible.	**Consistent.** The project would include simple identification signage at the facility gate. Such signage would be visible from I-10, a Designated County Scenic Highway.
	LU 13.8 Avoid the blocking of public views by solid walls.	**Consistent.** However, the high density of project structures would essentially form the appearance of a solid wall of steel and glass that would block views of the surrounding landscape from I-10 and nearby BLM recreational access roads.
The following policies apply to properties designated as Open Space-Rural on the area plan land use maps.	LU 20.1 Require that structures be designed to maintain the environmental character in which they are located.	**Not Consistent.** The industrial design and character of the project facilities would not maintain the existing landscape character of a desert valley floor, presently absent such industrial features.
	LU 20.2 Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.	**Not Consistent.** The industrial appearance of the project structures and vertical components would not blend with the existing natural-appearing desert valley landscape.
	LU 20.3 Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use.	**Consistent.** The proposed access road, administrative facilities, water sources, and disposal have been included as part of the project design.
	LU 20.4 Ensure that development does not adversely impact the open space and rural character of the surrounding area.	**Not Consistent.** Although the project has been intentionally located away from populated areas and sensitive viewers, the project would significantly impact the natural desert landscape and rural character of the site and surroundings.

Worker Safety and Fire Protection

Applicable LORS	Description
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC §651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
Riverside County Ordinance 457	Adopts specific building, mechanical, plumbing, and electrical codes from sources such as the California Building Standards Commission with county-specific modifications.
Riverside County Ordinance 787	Adopts the 2007 edition of the California Fire Code and portions of the 2007 edition of the California Building Code with county-specific modifications.
Riverside County Ordinance 615	Establishes requirements for the use, generation, storage and disposal of hazardous materials within the County.
Riverside County Department of Environmental Health, Hazardous Materials Releases	Adopts State requirements and guidelines to govern hazardous materials release response plans and inventories.
NFPA 850, 58, 15, and 54	These industry standards of the National Fire Protection Association (NFPA) address the storage of and safety measures for Liquefied Petroleum gases. NFPA 58 is specifically mentioned in the 2007 California Fire Code and therefore is enforceable by the local fire department.

Applicable LORS	Description
Chapter 22 of the 2007 California Fire Code	This section of the CFC addresses requirement for Motor Fuel-Dispensing Facilities and Repair Garages. It has been adopted by Riverside County and will apply to the fuel depot at the site.
NFPA 30a	This is the NFPA code for Motor Fuel Dispensing Facilities and Repair Garages (2008Edition) and is the industry standard for fuel depots.

Waste Management

Applicable LORS	Description
Federal	
Title 42, United States Code (U.S.C.), §6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.
Title 42, U.S.C., §9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as *Superfund*, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • Reporting requirements for releases of hazardous substances; • Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; • Liability of persons responsible for releases of hazardous substances or waste; and • Requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA “all appropriate inquiries” requirements.

Applicable LORS	Description
Title 40, Code of Federal Regulations (C.F.R.), Subchapter I – Solid Wastes	These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is a RCRA-authorized state, so most of the solid and hazardous waste regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.
Title 49, C.F.R., Parts 172 and 173. Hazardous Materials Regulations	These regulations address the United States Department of Transportation (DOT) established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
Federal Clean Water Act, 33 U.S.C. §1251 et seq.	The Clean Water Act controls discharge of wastewater to the surface waters of the U.S.
State	
California Health and Safety Code (Health and Safety Code), Chapter 6.5, §25100, et seq. Hazardous Waste Control Act of 1972, as amended	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.

Applicable LORS	Description
Title 22, California Code of Regulations (Cal. Code Regs.), Division 4.5. Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers; prepare manifests before transporting the waste off site; and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CAL. CODE REGS. include: • Identification and Listing of Hazardous Waste (Chapter 11, §66261.1, et seq.). • Standards Applicable to Generator of Hazardous Waste (Chapter 12, §66262.10, et seq.). • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §66263.10, et seq.). • Standards for Universal Waste Management (Chapter 23, §66273.1, et seq.). • Standards for the Management of Used Oil (Chapter 29, §66279.1, et seq.). • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §67450.1, et seq.). The Title 22 regulations are established and enforced at the state level by DTSC. Some generator and waste treatment standards are also enforced at the local level by CUPAs.

Applicable LORS	Description
Health and Safety Code, Chapter 6.11 §§25404 – 25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. • Aboveground Petroleum Storage Act requirements for Spill Prevention, Control, and Countermeasure (SPCC) Plans. • Hazardous Materials Release and Response Plans and Inventories (Business Plans). • California Accidental Release Prevention (CalARP) Program. • Hazardous Materials Management Plan / Hazardous Materials Inventory Statements. • Hazardous Waste Generator / Tiered Permitting Program. • Underground Storage Tank Program. The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as CUPAs. The DTSC's Calexico Field Office is the CUPA for the SES Solar Two project. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program.
Title 27, Cal. Code Regs., Division 1, Subdivision 4, Chapter 1, §15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). • Article 10 – Business Reporting to CUPAs (§§15600–15620).
Public Resources Code, Division 30, §40000, et seq. California Integrated Waste Management Act of 1989	The California Integrated Waste Management Act (CIWMA) establishes mandates and standards for management of solid waste in California. The law addresses solid waste landfill diversion requirements; establishes the preferred waste management hierarchy (source reduction first, then recycling and reuse, and treatment and disposal last); sets standards for design and construction of municipal landfills; and addresses programs for county waste management plans and local implementation of solid waste requirements.

Applicable LORS	Description
Title 14, Cal. Code Regs., Division 7, §17200, et seq. California Integrated Waste Management Board	These regulations implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling.
Health and Safety Code, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq. Hazardous Waste Source Reduction and Management Review Act of 1989	This law was enacted to expand the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (approximately 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a four-year cycle, with a summary progress report due to DTSC every fourth year.
Title 22, Cal. Code Regs., §67100.1 et seq. Hazardous Waste Source Reduction and Management Review	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
Title 23, Cal. Code Regs., Division 3, Chapters 16 and 18	These regulations relate to hazardous material storage and petroleum UST cleanup, as well as hazardous waste generator permitting, handling, and storage. The DTSC Imperial County CUPA is responsible for local enforcement.
Local	
County of Riverside General Plan, Safety Element: Policy S 6.1	Describes the County's policies and siting criteria identified in the County of Riverside Hazardous Waste Management Plan including coordination of hazardous waste facility responsibilities on a regional basis through the Southern California Hazardous Waste Management Authority
Riverside County Code Title 8 Chapters 8.60, 8.84, and 8.132, Health and Safety	Establishes requirements for the use, generation, storage, and disposal of hazardous and non-hazardous materials and wastes within the County.
Riverside County Code, Chapter 8.32, Ordinance No. 787, Fire	Adopted the 2007 California Fire Code.

Worker Safety and Fire Protection

Applicable LORS	Description
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC §651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
Riverside County Ordinance 457	Adopts specific building, mechanical, plumbing, and electrical codes from sources such as the California Building Standards Commission with county-specific modifications.
Riverside County Ordinance 787	Adopts the 2007 edition of the California Fire Code and portions of the 2007 edition of the California Building Code with county-specific modifications.
Riverside County Ordinance 615	Establishes requirements for the use, generation, storage and disposal of hazardous materials within the County.
Riverside County Department of Environmental Health, Hazardous Materials Releases	Adopts State requirements and guidelines to govern hazardous materials release response plans and inventories.
NFPA 850, 58, 15, and 54	These industry standards of the National Fire Protection Association (NFPA) address the storage of and safety measures for Liquefied Petroleum gases. NFPA 58 is specifically mentioned in the 2007 California Fire Code and therefore is enforceable by the local fire department.

Applicable LORS	Description
Chapter 22 of the 2007 California Fire Code	This section of the CFC addresses requirement for Motor Fuel-Dispensing Facilities and Repair Garages. It has been adopted by Riverside County and will apply to the fuel depot at the site.
NFPA 30a	This is the NFPA code for Motor Fuel Dispensing Facilities and Repair Garages (2008Edition) and is the industry standard for fuel depots.

Docket Number: **09-AFC-7**

Project Name: **Palen Solar Power Project**

FINAL EXHIBIT LIST

Applicant Palen Solar Millennium

Exhibit	Brief Description	Offered	Admitted
Exhibit 1	**Palen Solar I, LLC's Application for Certification Volumes I & II**, dated August 2009, and docketed on August 24, 2009.	**10/13/10**	**10/13/10**
Exhibit 2	**Air Quality Modeling Files**, dated August 2009 and docketed on August 31, 2009.	**10/13/10**	**10/13/10**
Exhibit 3	**Letter from Assembly Person V. Manuel Perez (Project Support Letter for PSPP & BSPP)**, dated October 21, 2009, and docketed on October 26, 2009.	**10/13/10**	**10/13/10**
Exhibit 4	**Palen Solar I, LLC's Data Adequacy Supplement**, dated October 2009, and docketed on October 30, 2009.	**10/13/10**	**10/13/10**
Exhibit 5	**Streambed Alteration Agreement Application**, dated November 2009, and docketed on November 25, 2009.	**10/13/10**	**10/13/10**
Exhibit 6	**Palen Solar Power Plant Pre-Development Drainage Conditions Report**, dated November 25, 2009, and docketed on November 30, 2009.	**10/13/10**	**10/13/10**
Exhibit 7	**New Alternative Approach to Staff Review for Cultural Resources**, dated December 1, 2009, and docketed on December 1, 2009.	**10/13/10**	**10/13/10**
Exhibit 8	**Palen Solar I, LLC's Selection of Cultural Resources Evaluation Approach**, dated December 21, 2009, and docketed on December 22, 2009.	**10/13/10**	**10/13/10**

Exhibit 9	**Palen Solar I, LLC's Application for the California Endangered Species Act Section 2081 (B) Incidental Take Permit and Revised Desert Tortoise Technical Report (including Fall 2009)**, dated January 2010, and docketed on January 13, 2010.	**10/13/10**	**10/13/10**
Exhibit 10	**Palen Solar I, LLC's Response to CEC Data Request 226 - Attachment G Water Supply Assessment**, dated January 2010, and docketed on January 19, 2010.	**10/13/10**	**10/13/10**
Exhibit 11	**Palen Solar I, LLC's Responses to CEC Data Requests Set 1**, dated January 2010, and docketed on January 22, 2010.	**10/13/10**	**10/13/10**
Exhibit 12	**Palen Solar I, LLC's Supplemental Responses to CEC Data Request Set 1**, dated January 2010, and docketed on January 27, 2010.	**10/13/10**	**10/13/10**
Exhibit 13	**Palen Solar I, LLC's Data Responses to January 7, 2010 CEC Workshop Queries and January 11, 2010 CEC Staff Email Queries with Attachment DR-CR-116a & b (Cultural Resources Impact Blocks)**, dated January 29, 2010 and docketed on February 1, 2010.	**10/13/10**	**10/13/10**
Exhibit 14	**Palen Solar I, LLC's Data Response to CEC January 11, 2010 Email Queries Regarding Acreage Clarification**, dated January 13, 2010, and docketed on February 4, 2010.	**10/13/10**	**10/13/10**
Exhibit 15	**Palen Solar I, LLC's Response to January 14, 2010 CEC Workshop Queries**, dated February 2010, and docketed on February 8, 2010.	**10/13/10**	**10/13/10**
Exhibit 16	**Palen Solar I, LLC's Responses to January 14, 2010 CEC Workshop Queries – Revised Construction Emissions Spreadsheet, Refinement to PSPP Air Permit Applications, and Response to CEC Data Request 29**, dated February 2010, and docketed on February 9, 2010.	**10/13/10**	**10/13/10**
Exhibit 17	**Palen Solar I, LLC's Supplemental Responses to CEC Data Requests, DR-BIO-60 through DR-BIO-62 & Preliminary Geomorphic Aeolian Ancient Lake Shoreline Report**, dated February 2010, and docketed on February 16, 2010.	**10/13/10**	**10/13/10**

Exhibit 18	**Palen Solar I, LLC's Responses to January 14, 2010 CEC Workshop Queries – (Supplemental Data for DR-S&W-242)**, dated February 2010, and docketed on February 16, 2010.	**10/13/10**	**10/13/10**
Exhibit 19	**Letter from Riverside County Planning Department (RE: Review of AFC and NOI)**, dated February 16, 2010 and docketed on February 17, 2010.	**10/13/10**	**10/13/10**
Exhibit 20	**Heat Transfer Fluid Emissions Conference Call Record of Conversation (Between W. Walters (Aspen) and CEC, Abengoa Solar, Inc, Abener N. America, Atmospheric Dynamics & Solutia, Inc)**, dated January 27, 2010, and docketed on February 24, 2010.	**10/13/10**	**10/13/10**
Exhibit 21	**Palen Solar I, LLC's Revised Habitat Mitigation & Monitoring Plan Impacts & Compensation Tables**, dated February 12, 2010, and docketed on March 8, 2010.	**10/13/10**	**10/13/10**
Exhibit 22	**Palen Solar I, LLC's Draft Biological Assessment**, dated March 2010, and docketed on March 9, 2010.	**10/13/10**	**10/13/10**
Exhibit 23	**South Coast Air Quality Management District's Preliminary Determination of Compliance**, dated March 4, 2010, and docketed on March 10, 2010.	**10/13/10**	**10/13/10**
Exhibit 24	**Palen Solar I, LLC's Responses to January 14, 2010, CEC Workshop Queries**, dated March 2010, and docketed on March 15, 2010.	**10/13/10**	**10/13/10**
Exhibit 25	**Palen Solar I, LLC's Supplemental Data Responses to January 14, 2010, CEC Workshop Queries (Groundwater) - DR – S&W – 242**, dated February 2010, and docketed on March 15, 2010.	**10/13/10**	**10/13/10**
Exhibit 26	**Palen Solar I, LLC's Spring Survey Protocols**, dated April 2010, and docketed on April 22, 2010.	**10/13/10**	**10/13/10**

Exhibit 27	**Palen Solar I, LLC's Initial Comments on the Staff Assessment/ Draft Environmental Impact Statement**, dated May 4, 2010, and docketed on May 4, 2010.	**10/13/10**	**10/13/10**
Exhibit 28	**Palen Solar I, LLC's Preliminary Spring 2010 Survey Results for Desert Tortoise, Rare Plants and Jurisdictional Waters**, dated May 7, 2010, and docketed on May 12, 2010.	**10/13/10**	**10/13/10**
Exhibit 29	**Palen Solar I, LLC's Initial Comments on the Biological Resources Section of the Staff Assessment/ Draft Environmental Impact Statement**, dated May 12, 2010, and docketed on May 12, 2010.	**10/13/10**	**10/13/10**
Exhibit 30	**Palen Solar I, LLC's Responses to Questions from the April 28, 29 and May 7, 2010 CEC Workshops – Draft Aeolian Sand Mitigation Summary Report**, dated May 14, 2010, and docketed on May 19, 2010.	**10/13/10**	**10/13/10**
Exhibit 31	**Palen Solar I, LLC's, Responses to Questions from the April 28, 29 and May 7, 2010 CEC Workshops – Mojave Fringe -Toed Lizard Mitigation**, dated May 14, 2010, and docketed on May 19, 2010.	**10/13/10**	**10/13/10**
Exhibit 32	**Palen Solar I, LLC's Wildlife Movement and Desert Tortoise Habitat Connectivity Analysis**, dated May 14, 2010, and docketed on May 19, 2010.	**10/13/10**	**10/13/10**
Exhibit 33	**Riverside County Zoning Letter**, dated May 20, 2010, and docketed on May 21, 2010.	**10/13/10**	**10/13/10**
Exhibit 34	**Palen Solar I, LLC's Responses to Questions from the April 28, 29, and May 7, 2010, CEC Workshops- Worker Safety, Hazardous Materials, Soil & Water Resources**, dated May 21, 2010, and docketed on May 21, 2010.	**10/13/10**	**10/13/10**

Exhibit 35	**Palen Solar I, LLC's Responses to Questions from the April 28, 29 and May 7, 2010, CEC Workshops - Natural Gas vs. Propane at PSPP and Southern California Edison's Red Bluff Substation Project Description**, dated May 2010 and April 2010 (respectively), and docketed on May 22, 2010.	**10/13/10**	**10/13/10**
Exhibit 36	**Palen Solar I, LLC's Application/ Report of Waste Discharge - Soil & Water Resources**, dated May 25, 2010, and docketed on May 25, 2010.	**10/13/10**	**10/13/10**
Exhibit 37	**Palen Solar I, LLC's Revised Rule 1401 Health Risk Assessment for Auxiliary Boiler Operations**, dated May 25, 2010, and docketed on May 25, 2010.	**10/13/10**	**10/13/10**
Exhibit 38	**Palen Solar I, LLC's Responses to Select CURE Data Requests Set 1**, dated June 14, 2010, and docketed on June 15, 2010.	**10/13/10**	**10/13/10**
Exhibit 39	**Palen Solar I, LLC's Responses to Basin and Range Watch Data Requests**, dated June 14, 2010, and docketed on June 15, 2010.	**10/13/10**	**10/13/10**
Exhibit 40	**Palen Solar I, LLC's Spring 2010 Survey Results Corrected & Preliminary Impact Calculations**, dated May 27, 2010, and docketed on June 16, 2010.	**10/13/10**	**10/13/10**
Exhibit 41	**Emails Regarding School Impact Fee (Between Dennis Larson (AECOM) and Scott Debauche (Aspen Environmental Group))**, dated February, 9, 2010, and docketed on June 18, 2010.	**10/13/10**	**10/13/10**
Exhibit 42	**Palen Solar I, LLC's Supplementary Information - Reconfigured Alternative 2 & Reconfigured Alternative 3**, dated June 2010, and docketed on July 2, 2010.	**10/13/10**	**10/13/10**
Exhibit 43	**Palen Solar I, LLC's HTF Fugitive Components Letter**, dated June 25, 2010, and docketed on July 20, 2010.	**10/13/10**	**10/13/10**

Exhibit 44	**Palen Solar I, LLC's Data Responses to Alternatives 2 & 3**, dated July 20, 2010 and docketed on July 20, 2010.	**10/13/10**	**10/13/10**
Exhibit 45	**Palen Solar I, LLC's Redacted Phase II Study**, dated July 8, 2010, and docketed on July 28, 2010.	**10/13/10**	**10/13/10**
Exhibit 46	**Email Regarding Receptors Alternatives Figures (From Russell Kingsley (AECOM) to Jillian Baker (SCAQMD))**, dated July 2010, and docketed on July 30, 2010.	**10/13/10**	**10/13/10**
Exhibit 47	**Palen Solar I, LLC's Responses to CEC Staff's Email Request for Information**, dated August 2010, and docketed on August 5, 2010.	**10/13/10**	**10/13/10**
Exhibit 48	**Letter from BLM Inviting CEC Deputy Director T. Obrien to Participate in the Cultural Resources Programmatic Agreement**, dated March 15, 2010, and docketed on August 9, 2010.	**10/13/10**	**10/13/10**
Exhibit 49	**CEC's Response to BLM's Invitation to Participate in the Programmatic Agreement Section 106 Consultation for PSPP**, dated August 9, 2010, and docketed on August 10, 2010.	**10/13/10**	**10/13/10**
Exhibit 50	**Palen Solar I, LLC's Drainage Diffusers for PSPP**, dated February 15, 2010 and docketed on August 13, 2010.	**10/13/10**	**10/13/10**
Exhibit 51	**Palen Solar I, LLC's Updated Hazardous Materials Table 5.6-3R for PSPP Reconfigured Alternatives 2 & 3**, dated August 2010, and docketed on August 13, 2010.	**10/13/10**	**10/13/10**
Exhibit 52	**Letter from the U.S. Department of the Army Regarding Approved Jurisdictional Determination**, dated August 2, 2010, and docketed on August 16, 2010.	**10/13/10**	**10/13/10**
Exhibit 53	**Palen Solar I, LLC's Data Responses to Reconfigured Alternatives 2 & 3 – Biological Resources**, dated July 21, 2010, and docketed on August 18, 2010.	**10/13/10**	**10/13/10**

Exhibit 54	**Palen Solar I, LLC's Response to CEC Committee's July 29, 2010 Order and Response to CURE's Petition to Compel Production of Information**, dated August 24, 2010, and docketed on August 24, 2010.	**10/13/10**	**10/13/10**
Exhibit 55	**Department of Transportation Letter Regarding Gen-Tie and Telecommunication Encroachment Concurrence**, dated August 23, 2010, and docketed on August 30, 2010.	**10/13/10**	**10/13/10**
Exhibit 56	**Palen Solar I, LLC's Golden Eagle Survey Results**, dated September 13, 2010, and docketed on September 13, 2010.	**10/13/10**	**10/13/10**
Exhibit 57	**Palen Solar I, LLC's Opening Testimony,** dated October 6, 2010, and docketed on October 6, 2010.	**10/13/10**	**10/13/10**
Exhibit 58	**Condition of Certification TRANS-6**	**10/13/10**	**10/13/10**
Exhibit 59	**Hyundai Motor America Mojave Proving Grounds Desert Tortoise Translocation Study 2006 Annual Summary**, dated March 2007, and docketed on October 22, 2010.	**10/27/10**	**10/27/10**
Exhibit 60	**Chapter 7 Guidelines for Handling Desert Tortoises – Mojave Population and Their Eggs,** dated December 2009, and docketed on October 22, 2010.	**10/27/10**	**10/27/10**
Exhibit 61	**Mechanistic Investigation of the Distributional Limits of the Desert Tortoise,** dated May 2004, and docketed on October 22, 2010.	**10/27/10**	**10/27/10**
Exhibit 62	**Field Et Al. 2007 Return to the Wild: Translocation as a Tool in Conservation of the Desert Tortoise,** dated January 11, 2007, and docketed on October 22, 2010.	**10/27/10**	**10/27/10**
Exhibit 63	**Palen Solar I, LLC's Rebuttal Testimony: Biological Resources,** dated October 22, 2010, and docketed on October 22, 2010.	**10/27/10**	**10/27/10**
Exhibit 64	**Palen Solar Power Project Fall Botanical Surveys,** dated October 26, 2010 and docketed on October 26, 2010.	**10/27/10**	**10/27/10**
Exhibit 65	**Applicant's Opening Testimony on Air Quality and Soil & Water Resources,** dated October 15, 2010, and docketed on October 15, 2010	**12/2/10**	**12/2/10**

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Energy Commission Staff

Exhibit	Witness	Brief Description	Offered	Admitted
300	Various	Revised Staff Assessment, Part I	10/13/10	10/13/10
301	Various	Revised Staff Assessment, Part II	10/13/10	10/13/10
302	Various	Energy Commission Staff's Rebuttal Testimony, filed October 11, 2010	10/13/10	10/13/10
303	Various	Energy Commission Staff's Rebuttal Testimony, filed October 22, 2010	10/27/10	10/27/10
304	Collison	Griffiths et al 2002 report - Long-term sand supply to Coachella Valley fringe-toed lizard (*Uma inornata*) habitat in the northern Coachella Valley, California: U.S. Geological Survey Water-Resources Investigations Report.	10/27/10	10/27/10
305	Collison	Turner et al 1984 report - Effects of reduction in windblown sand on the abundance of the fringe-toed lizard (*Uma inornata*) in the Coachella Valley, California. Copeia 1984.	10/27/10	10/27/10
306	Sanders	Barrows et al 2009 report - Effects of an invasive plant on a desert sand dune landscape. Biological Invasions 11:673.	10/27/10	10/27/10

307	**Sanders**	**REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-N EWE Mitigation Account, dated July 23, 2010**	**10/27/10**	**10/27/10**
308	**Collison**	**Weaver, D.C. 1981. Aeolian sand transport and deposit characteristics at ten sites in Coachella Valley, California. Part II. In: The effect of blowsand reduction on the abundance of the fringe-toed lizard (*Uma inornata*) in the Coachella Valley, California. A report submitted to U.S. Army Corps of Engineers, Los Angeles District.**	**10/27/10**	**10/27/10**
309	**Sanders**	**Barrows, C.W. 1996 An ecological model for the protection of a dune ecosystem. Conserv. Biol. 10(3).**	**10/27/10**	**10/27/10**
310	**Chainey-Davis, Sanders, Donovan**	**Helix – Palen exhibit, Groundwater Drawdown and Vegetation Communities**	**10/27/10**	**10/27/10**
311	**Chainey-Davis, Sanders, Donovan**	**Figure 5.17-2 – Site Topography Map, Solar Millennium AFC August 2009, Water Resources Section**	**10/27/10**	**10/27/10**
312	**Chainey-Davis, Sanders, Donovan**	**Groundwater-dependent Ecosystems, Test Wells, and Proposed New Wells**	**10/27/10**	**10/27/10**
313	**Collison**	**PWA Microsoft PowerPoint presentation**	**10/27/10**	**10/27/10**
314	**Vidaver**	**Black and Veatch, LTPP Solar PV Performance and Cost Estimates**	**10/27/10**	**10/27/10**
315	**Chainey-Davis**	**Solar Millennium Responses to January 14, 2010 Workshop Queries on Ground Water.**	**10/27/10**	**10/27/10**
316	**Collison**	**Wind Barriers offer Short Term Solution to Fugitive Dust. California Agriculture, Volume 52, Number 4, pages 14 – 18.**	**10/27/10**	**10/27/10**

317	**Walters**	**Energy Commission Staff's Supplemental Air Quality Testimony, October 26, 2010**	**10/27/10**	**10/27/10**
318	**Walters**	**South Coast Air Quality Management District's Revised Determination of Compliance for Palen Solar Power Project**	**10/27/10**	**10/27/10**
319	**Chainey-Davis, Sanders, Donovan**	**Revised Table 3 for Condition of Certification BIO-29.**	**10/27/10**	**10/27/10**
320	**Walters**	**South Coast Air Quality Management District's Final Determination of Compliance for Palen Solar Power Project**	**12/2/10**	**12/2/10**
321	**Walters**	**Additional Supplemental Testimony and Declaration of William Walters, P.E.**	**12/2/10**	**12/2/10**

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Project Name: **Palen Solar Power Project**

THE CENTER FOR BIOLOGICAL DIVERSITY

Exhibit	Brief Description	Offered	Admitted
600	Testimony of Bill Powers, P.E., Regarding Alternatives, Declaration, Resume.	**10/27/10**	**10/27/10**
601	Renewable Energy World, Germany Adds Nearly 1% of Electricity Supply with Solar in Eight Months, October 4, 2010.	**10/27/10**	**10/27/10**
602	CPUC Press Release – Docket A.08-03-015, *CPUC Approves Edison Solar Roof Program*, June 18, 2009. "The energy generated from the project will be used to serve Edison's retail customers and the output from these facilities will be counted towards Edison's RPS goals."	**10/27/10**	**10/27/10**
603	CPUC Resolution E-4240, *Approval of a power purchase agreement (PPA) for generation from a new solar photovoltaic facility between PG&E and El Dorado Energy*, LLC (Sempra Generation), May 18, 2009.	**10/27/10**	**10/27/10**
604	GreenTech Media, Sempra Wants 300 MW Plus of Solar in Arizona, April 22, 2009. "The electricity we are getting out of the 10-megawatt is the lowest cost solar energy ever generated from anywhere in the world." (CEO Michael Allman).	**10/27/10**	**10/27/10**
605	First Solar press release, First Solar Sells California Solar Power Project to NRG, November 23, 2009.	**10/27/10**	**10/27/10**
606	SCE Application A.08-03-015, Solar Photovoltaic (PV) Program Application, March 27, 2008,	**10/27/10**	**10/27/10**
607	CPUC Press Release – Docket A.09-02-019, CPUC Approves Solar PV Program for PG&E, April 22, 2010.	**10/27/10**	**10/27/10**

608	CPUC Rulemaking R.08-08-009 – California RPS Program, Administrative Law Judge's Ruling on Additional Commission Consideration of a Feed-In Tariff, Attachment A - Energy Division FIT Staff Proposal, March 27, 2009, p. 15.	**10/27/10**	**10/27/10**
609	E-mail from M. Martyak, PowerSecure (www.powersecure.com), to B. Powers, Powers Engineering, January 13, 2010. Approximate cost to upgrade older 100 MW distribution substation to full bidirectional flow, assuming four 25 MW load banks with four circuit breakers each (16 total), would be $400,000 to $450,000.	**10/27/10**	**10/27/10**
610	CPUC Application No. 06-08-010, Matter of the Application of San Diego Gas & Electric Company (U-902-E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project, Chapter 5: Prepared Rebuttal Testimony of SDG&E in Response to Phase 2 Testimony of Powers Engineering, March 28, 2008, p. 5.20.	**10/27/10**	**10/27/10**
611	E3 and Black & Veatch, Straw proposal of solution to address short-term problem of information gap, presentation at CPUC Re-DEC Working Group Meeting, December 9, 2009, p. 9. Online at: http://www.cpuc.ca.gov/PUC/energy/Renewables/Re-DEC.htm	**10/27/10**	**10/27/10**
612	New York Times, Climate Change Seen as Threat to U.S. Security, August 9, 2009.	**10/27/10**	**10/27/10**
613	CPUC PG&E Application A.09-02-019, Application of Pacific Gas and Electric Company to Implement Its Photovoltaic Program, February 24, 2009.	**10/27/10**	**10/27/10**
614	E3 and Black & Veatch, Summary of PV Potential Assessment in RETI and the 33% Implementation Analysis, presentation at Re-DEC Working Group Meeting, December 9, 2009, p. 24. Online at: http://www.cpuc.ca.gov/PUC/energy/Renewables/Re-DEC.htm	**10/27/10**	**10/27/10**
615	CPUC, 33% Renewables Portfolio Standard Implementation Analysis Preliminary Results, June 2009	**10/27/10**	**10/27/10**
616	Navigant, PV Grid Connected Market Potential under a Cost Breakthrough Scenario, prepared for The Energy Foundation, September 2004, p. 83. California commercial rooftop PV potential estimated at approximately 37,000 MWp.	**10/27/10**	**10/27/10**
617	RightCycle Inc. comment letter, working group member response to June 2009 33% Renewables Portfolio Standard Implementation Analysis Preliminary Results, in response to CPUC request for comments, August 28, 2009.	**10/27/10**	**10/27/10**

618	J. Firooz, P.E., CAISO: How Its Transmission Planning Process has Lost Sight of the Public's Interest, April 2010.	**10/27/10**	**10/27/10**
619	DOE, DOE Solar Vision Study – DRAFT, May 28, 2010.	**10/27/10**	**10/27/10**
620	CPUC Resolution E-4214, 2008 Market Price Referent values for use in the 2008 Renewable Portfolio Standard solicitations, December 18, 2008. MPR, 2012 operational date, 20-yr PPA: $0.12126/kWh.	**10/27/10**	**10/27/10**
621	SCE Application A.08-03-015, Solar Photovoltaic (PV) Program Supplemental Rebuttal Testimony, October 14, 2008	**10/27/10**	**10/27/10**
622	CPUC Rulemaking R.06-02-012, Develop Additional Methods to Implement California RPS Program, Pre-Workshop Comments of GreenVolts, Cleantech America, and Community Environmental Council on the 2008 Market Price Referent, March 6, 2008, p. 15.	**10/27/10**	**10/27/10**
623	SNL Financial, SoCalEd orders 200 MW of solar panels, plans solicitation for 250 MW more, March 10, 2010	**10/27/10**	**10/27/10**
624	SCE Application A.08-03-015, Solar Photovoltaic (PV) Program Testimony, March 27, 2008, p. 32.	**10/27/10**	**10/27/10**
625	SNL Financial, SoCalEd taps Trina Solar to supply 45 MW of PV modules, June 9, 2010.	**10/27/10**	**10/27/10**
626	Worldwatch Institute, Record Growth in Photovoltaic Capacity and Momentum Builds for Concentrating Solar Power, June 3, 2010	**10/27/10**	**10/27/10**
627	Schreiber, D. - EuPD Research, PV Thin-film Markets, Manufacturers, Margins, presentation at 1st Thin-Film Summit, San Francisco, December 1-2, 2008. Exhibit 829 Genesis	**10/27/10**	**10/27/10**
628	First Solar press release, First Solar Becomes First PV Company to Produce 1GW in a Single Year, December 15, 2009.	**10/27/10**	**10/27/10**
629	B. Murphy – Fulcrum Technologies, Inc., The Power and Potential of CdTe (thin-film) PV, presented at 2nd Thin-Film Summit, San Francisco, December 1-2, 2009.	**10/27/10**	**10/27/10**
630	PV Tech, Worldwide photovoltaics installations grew 110% in 2008, says Solarbuzz, March 16, 2009.	**10/27/10**	**10/27/10**

631	PV Tech, German market booming: Inverter and module supplies running out at Phoenix Solar, November 15, 2009.	**10/27/10**	**10/27/10**
632	Renewable Energy World, Germany Adds Nearly 1% of Electricity Supply with Solar in Eight Months, October 4, 2010.	**10/27/10**	**10/27/10**
633	Chadbourne & Parke Project Finance Newswire, Germany Cuts Solar Subsidy, April 2010.	**10/27/10**	**10/27/10**
634	RETI discussion draft, RETI Net Short Update - Evaluating the Need for Expanded Electric Transmission Capacity for Renewable Energy, February 22, 2010.	**10/27/10**	**10/27/10**
635	U.S. DOE, Stand-Alone Flat-plate Photovoltaic Systems: System Sizing and Life-Cycle Costing Methodology for Federal Agencies, 1984, Appendix, p. A-27. ** to be provided**	**10/27/10**	**10/27/10**
636	NREL, Solar Radiation Data Manual for Flat-Plate and Concentrating Collectors, California cities data: http://rredc.nrel.gov/solar/pubs/redbook/PDFs/CA.PDF ** to be provided**	**10/27/10**	**10/27/10**
637	E-mail communication between Don Kondoleon, manager – CEC Transmission Evaluation Program, and Bill Powers of Powers Engineering, January 30, 2008 [Exhibit 23 EITP]	**10/27/10**	**10/27/10**
638	Transmission & Distribution World, California bulks up to provide more transmission capacity, June 1, 2004 [Exhibit 12 EITP]	**10/27/10**	**10/27/10**
639	Anthem Group press release, Central California Renewable Master Plan, March 2010.	**10/27/10**	**10/27/10**
640	Testimony of Ileene Anderson Re: Impacts to Sensitive Plants and Wildlife from the Proposed Palen Solar Energy Project, Declaration, and Resume	**10/27/10**	**10/27/10**
641	Moilanen, A., A.J.A. van Teeffelen, Y. Ben-Haim and S. Ferrier. 2009. How much compensation is enough? A framework for incorporating uncertainty and time discounting when calculating offset ratios for impacted habitat. Restoration Ecology 17(4): 470-478.	**10/27/10**	**10/27/10**
642	Norton, D.A. 2009. Biodiversity offsets: two New Zealand case studies and an assessment framework. Environmental Management 43(4):698- 706	**10/27/10**	**10/27/10**
643	U.S. Fish and Wildlife Service (USFWS) 2009. Range-wide monitoringof the Mojave population of the Desert Tortoise: 2007 Annual Report. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada. Pgs. 77.	**10/27/10**	**10/27/10**

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645	Independent Science Advisors (ISA) 2010. Recommendations of Independent Science Advisors for the California Desert Renewable Energy Conservation Plan (DRECP). Prepared For Renewable Energy Action Team. Prepared By The DRECP Independent Science Advisors. DRECP-1000-2010-008. August 2010. Pgs. 172	**10/27/10**	**10/27/10**
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APPLICATION FOR CERTIFICATION FOR THE *PALEN SOLAR POWER PLANT PROJECT*

Docket No. 09-AFC-7

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DECLARATION OF SERVICE

I, _____, declare that on _____, 2010, I served and filed copies of the attached _____. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://www.energy.ca.gov/sitingcases/solar_millennium_palen]

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I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

_____