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PALEN SOLAR ELECTRIC GENERATING SYSTEM

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

Volume 1 of 2

July 2013

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United States Department of the Interior

Bureau of Land Management

Draft Supplemental EIS
for the
Palen Solar Electric Generating System
(formerly Palen Solar Power Project)

For the

Palm Springs – South Coast Field Office

Palm Springs, California

July 2013

Rebecca Lasell
Acting Field Manager

Date July 17, 2013

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July 19, 2013

Dear Reader:

I am pleased to announce the availability of the Draft Supplemental Environmental Impact Statement (Draft SEIS) for the Palen Solar Electric Generating System (PSEGS). Palen Solar Holdings, LLC (Applicant) is proposing to develop a 500-megawatt (MW) energy plant in Riverside County, California, using concentrating solar thermal power tower technology. In 2008, the previous project proponent, Palen Solar I, LLC filed a right-of-way (ROW) application for a concentrating solar project that would use solar parabolic trough technology to generate electricity (Palen Solar Power Project or PSPP). The PSPP application was analyzed through a proposed California Desert Conservation Area (CDCA) Plan Amendment/Final Environmental Impact Statement, which is referred to in the Draft SEIS as the PSPP PA/FEIS. In addition proposing a different technology than the PSPP, the PSEGS includes a shift in the location of a portion of the generation tie (gen-tie) line to accommodate the relocation of the Red Bluff Substation and align the transmission line corridor of the PSEGS within the Desert Sunlight Solar Farm Project transmission line ROW, and the addition of a natural gas supply line to deliver natural gas to the PSEGS from the existing Southern California Gas distribution system.

This Draft SEIS supplements and does not replace the May 2011 PSPP PA/FEIS. If the requested ROW grant is authorized, the BLM will rely on the environmental analysis in the PSPP PA/FEIS as supplemented in the Draft SEIS to support the necessary amendment of the CDCA Plan that would identify the site as associated with power generation and transmission. The Draft SEIS analyzes the direct, indirect, and cumulative effects of the PSEGS, carries forward two alternatives from the PSPP PA/FEIS (Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A), and analyzes cumulative effects of each of these alternatives relative to an updated cumulative scenario. The BLM also will rely on the analysis of direct and indirect effects of the alternatives in the PSPP PA/FEIS in preparing a new, consolidated Proposed Resource Management Plan Amendment/Final Environmental Impact Statement for the PSEGS following receipt and consideration of comments on the Draft SEIS.

Comments on the Draft SEIS will be accepted for 90 calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the Federal Register. The BLM can best utilize your comments and resource information submissions if received within the review period. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Comments may be sent to Frank McMenimen, Project Manager, by mail: 1201 Bird Center Drive, Palm Springs, CA 92262; phone: (760) 833-7150; or email: fmcmenimen@blm.gov.

Public meetings will be held in Blythe and Palm Springs, California, to provide clarification of the PSEGS and alternatives, describe the impacts and mitigation measures, and accept written public comments. Please see BLM's web page at http://www.blm.gov/ca/st/en/fo/palmsprings/solar_projects/palen_solar_electric.html for information about the location, date, and time of these meetings. All substantive issues raised during the comment period will be considered and responded to, and modifications based on these comments may be made in the Final SEIS.

Your review and comments on the content of this document are critical to the success of this planning effort. If you wish to submit comments on the Draft SEIS, we request that you make your comments as specific as possible. Comments will be more helpful if they include suggested changes, sources, or methodologies, and reference to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision making process, but will not receive a formal response from the BLM.

Before including your address, phone number, email address, or other personal identifying information in your comment, be advised that your entire comment - including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Additional hard copies or CD-ROM versions of the Draft SEIS may be obtained by contacting the Palm Springs-South Coast Field Office. The document also will be available on the Internet at: http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/palen_solar_electric.html.

We are pleased to provide the PSEGS Draft SEIS for your review and extend our appreciation for your cooperation and assistance during this process. We look forward to your continued participation.

Sincerely,

Rebecca R. Lasell
Acting Field Manager

California Desert District

Palen Solar Electric Generating System

Draft Supplemental Environmental Impact Statement

Bureau of Land Management (BLM)
Palm Springs-South Coast Field Office (PSSCFO)

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Abstract

This Draft Supplemental Environmental Impact Statement (Draft SEIS) is in response to an application for a right-of-way (ROW) grant authorizing the construction, operation, maintenance, and decommissioning of a solar electricity generation facility known as the Palen Solar Electric Generating System (PSEGS) and the transmission of energy generated by the PSEGS to the grid via Southern California Edison's Red Bluff Substation. If the PSEGS is approved, amendments to the California Desert Conservation Area (CDCA)Plan of 1980, as amended, would be required to allow power generation at the site and transmission over 161 kV outside of an approved corridor.

This Draft SEIS supplements and does not replace the May 2011 Proposed Resource Management Plan Amendment/Final Environmental Impact Statement issued for the Palen Solar Power Project (PSPP PA/FEIS). If the requested ROW grant is authorized, the BLM will rely on the environmental analysis in the PSPP PA/FEIS as supplemented by the Draft SEIS and revised in response to comments received, all of which will be consolidated in a new Proposed Resource Management Plan Amendment/Final EIS for the PSEGS, to support the necessary amendments of the CDCA Plan to allow power generation at the site and transmission over 161 kV outside of an approved corridor.

Draft SEIS Chapter 2 describes the proposal of Palen Solar Holdings, LLC to develop a 500-megawatt (MW) energy plant on 3,896 acres of public land within a 5,200-acre ROW in Riverside County, California, using concentrating solar thermal power tower technology (instead of the solar thermal trough technology analyzed in the PSPP PA/FEIS), shift a portion of the generation tie-line from the route analyzed in the PSPP PA/FEIS, install a redundant telecommunications cable beneath the gen-tie line access road, and upgrade and extend an existing natural gas distribution line from the main transmission natural gas pipeline located approximately 0.56 miles south of the PSEGS site to the PSEGS site. Southern California Gas (SoCalGas) would permit, construct, own, and operate the upgraded and extended natural gas line, which would be the subject of an SF 299 ROW application to be filed separately by SoCalGas. The BLM is analyzing the potential effects of the proposed natural gas line work as a connected action in the Draft SEIS. Chapter 2 also describes the two alternatives carried forward from the PSPP PA/FEIS (Reconfigured Alternative 2 and No Action Alternative A). Chapter 3 describes existing conditions on and near the requested ROW to the extent they have changed relative to the PSPP PA/FEIS. Chapter 4 describes the potential direct and indirect effects of the PSEGS and analyzes cumulative effects of all of the alternatives relative to an updated cumulative scenario.

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EXECUTIVE SUMMARY

ES.1 Introduction

The California Desert District, Palm Springs-South Coast Field Office (PSSCFO), of the Bureau of Land Management (BLM) has prepared this Draft Supplemental Environmental Impact Statement (Draft SEIS) for the Palen Solar Electric Generating System (PSEGS). The Draft SEIS addresses a new alternative to be considered by the BLM in the context of the Palen Solar Power Project (PSPP), which was analyzed together with alternatives in the PSPP Proposed Resource Management Plan Amendment/Final EIS (PSPP PA/FEIS; BLM 2011). The PSEGS has been proposed by a new project proponent and would involve a different solar technology than the one analyzed in the PSPP PA/FEIS, a modified site layout within the previously analyzed project area, and new components in areas that were not analyzed in the PSPP PA/FEIS, including a portion of the previously analyzed generation tie (gen-tie) transmission line that would be rerouted, a new redundant telecommunications cable, and a natural gas supply pipeline that would be upgraded and extended from existing infrastructure owned and operated by Southern California Gas (SoCal Gas).

ES.2 Background

In 2008, the previous project proponent, Palen Solar I, LLC (PSI) a wholly owned subsidiary of Solar Millennium, filed a ROW application for a concentrating solar project that would use solar parabolic trough technology to generate electricity for the PSPP. The BLM, pursuant to its obligations under the Federal Land Policy and Management Act of 1976 (FLPMA) and National Environmental Policy Act (NEPA), prepared the PSPP PA/FEIS (and prior to that a Draft Resource Management Plan Amendment/Draft EIS) and began drafting a Record of Decision (ROD) for the PSPP. However, prior to finalizing the ROD, PSI informed the BLM that it would not likely construct the project as described in the PSPP PA/FEIS. Therefore, the BLM did not finalize the ROD, did not amend the resource management plan, and did not issue a ROW for the PSPP. On April 2, 2012, PSI along with other Solar Millennium US-based companies petitioned for relief in federal bankruptcy court. On June 21, 2012, the bankruptcy court conducted an auction and determined that BrightSource Energy, Inc. (BSE) was the approved bidder to acquire PSI's assets. On June 29, 2012, PSI submitted a SF 299 application to the BLM to transfer the existing application (CACA 48810) from PSI to Palen Solar Holdings III (PSIII), at the time a wholly owned corporation of PSI. On July 19, 2012, the BLM decided to accept the transfer of the application to PSIII. On June 21, 2012, the bankruptcy court approved the transfer and BSE acquired all rights to PSIII. Concurrent with its filing of the SF 299 with the BLM, BSE created a new project company, Palen Solar Holdings, LLC (PSH), which is a joint venture of BSE and Abengoa and the sole owner of PSIII. PSH is the applicant (Applicant) for the PSEGS.

ES.3 BLM's Purpose and Need

The statement of BLM's Purpose and Need for action that is provided in Section 1.1.1 of the PSPP PA/FEIS (p. 1-2) remains valid, although the discussion of the concurrent amendment of the California Desert Conservation Area (CDCA) Plan of 1980, as amended merits further discussion. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation that are not identified in the CDCA Plan to be added to it through the land use plan amendment process. Additionally, the CDCA Plan, as amended, requires that transmission lines above 161 kV be placed with in designated corridors.

The PSEGS solar plant site is within the CDCA, but is not identified in the CDCA Plan for solar power generation; the gen-tie line pathway also is within the CDCA, but the route is not fully within a designated corridor identified in the CDCA Plan. Therefore, if the BLM decides to approve the issuance of a ROW grant, two CDCA Plan amendments also would be required. One Plan Amendment would allow the solar generation facility; the other Plan Amendment would allow the gen-tie line outside of a designated corridor. To inform the Plan Amendment decisions, the BLM will rely on the environmental and other analysis set forth in the PSPP PA/FEIS as supplemented by the Draft SEIS and revised in response to comments received, all of which will be consolidated in a new Proposed Resource Management Plan Amendment/Final EIS for the PSEGS. (No Plan Amendment is required for the proposed natural gas supply line upgrade and extension because the line would be less than 12 inches in diameter).

ES.4 Applicant's Project Objectives

The Applicant's primary objective for the PSEGS is to deliver 500 MW of renewable electrical energy to the regional electrical grid to fulfill its existing approved Power Purchase Agreements (PPAs) for electrical sales from the facility. The Applicant's specific objectives for the project include development of a site:

- for which some of the permits and other authorizations required for construction of a solar thermal power plant had been completed and/or obtained (e.g., the California Energy Commission (CEC) licensed the PSPP on December 15, 2010, as a 500-megawatt (MW) solar thermal power-generating facility utilizing parabolic trough technology),
- large enough to accommodate BSE Power Tower Solar Technology,
- included within a BLM designated Solar Energy Zone (SEZ), and
- with an executed and approved Large Generator Interconnection Agreement (LGIA) for interconnection to a substation that would be operational in time to meet delivery of electricity under current CPUC Approved PPAs.

In addition stated objectives for the PSEGS encompass the state and federal goals for development of renewable energy on public land as described in Section 1.1.1 of the PSPP PA/FEIS (pp. 1-2 and 1-3).

ES.5 Purpose of this Draft SEIS

The analysis in this Draft SEIS has been prepared in accordance with the NEPA regulations (40 CFR §1502.6(c)). Supplementing is used to meet the purposes of NEPA as efficiently as possible, avoiding redundancy in the process. Accordingly, this Draft SEIS does not repeat or replace the information and analysis presented in the PSPP PA/FEIS, but rather adds to it with a focus on changed circumstances and project modifications that could result in environmental effects that were not discussed in the PSPP PA/FEIS. For example, the environmental context within which the PSEGS would occur, as described in Chapter 3, *Affected Environment*, has not changed substantially since publication of the PSPP PA/FEIS; therefore, much of that discussion has not been supplemented. Similarly, where environmental consequences previously analyzed and those of the PSEGS would be similar, this Draft SEIS cross-references the analysis provided in the PSPP PA/FEIS to support its conclusions. For ease in review, a copy of the PSPP PA/FEIS is provided as Appendix B to this document on a CD-ROM (if reviewing a paper copy), or as a separate electronic file if reviewing the Draft SEIS document electronically. The BLM will rely on the PSPP PA/FEIS as supplemented by the Draft SEIS and revised in response to comments received on the Draft SEIS to prepare a consolidated Proposed Resource Management Plan Amendment/Final EIS for the PSEGS.

ES.6 Public Involvement with the Draft SEIS

A minimum of 90 days will be provided for commenting on the Draft SEIS and Proposed CDCA Plan Amendments. BLM will review and provide responses to all substantive comments based on the Council on Environmental Quality (CEQ) regulations (40 CFR §1503.4.) and guidance found in BLM NEPA Handbook H-1790-1. Information about all opportunities for public involvement will be maintained on the following BLM website: http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/palen_solar_electric.html

ES.7 Summary Description of the PSEGS and Alternatives

The PSPP PA/FEIS described and analyzed multiple “action” and “no action” alternatives, including a solar parabolic trough power project consisting of two power plants, each with a nominal capacity of 250 MW. The PSPP, as proposed, would have resulted in a 500 MW solar thermal trough project within a ROW area of approximately 5,200 acres, of which approximately 3,107 would have been disturbed by construction and operation. The PSPP PA/FEIS also evaluated alternatives to the project as proposed, each of which would use solar thermal trough technology to generate the same output as the PSPP, but be reconfigured to avoid impacts to sensitive resources. Reconfigured Alternative 2 (Options 1 and 2) involved realignment of the solar fields to reduce impacts to a nearby sand transport corridor, and habitats for sand dune vegetation and the Mojave fringe-toed lizard. Key differences between the two Options centered on the amount of private land required for their layouts. Disturbance areas estimated for Option 1 and Option 2 are 4,366 and 4,330 acres, respectively. Reconfigured Alternative 2, including Option 1 and Option 2, is described in PSPP PA/FEIS Section 2.4.1 (pp. 2-22 through 2-25). Among the suite of no action alternatives described and analyzed in the PSPP PA/FEIS, No Action Alternative A would result if the ROW application would be denied, the ROW grant not authorized, and the CDCA Plan not amended for the proposed solar use (see PSPP PA/FEIS, p. 2-26).

PSPP PA/FEIS Section 2.4.2 (p. 2-26) identified Reconfigured Alternative 2 as the BLM's Preferred Alternative. For the purposes of this Draft SEIS, the BLM has carried forward for further consideration the Agency Preferred Alternative identified in the PSPP PA/FEIS (Reconfigured Alternative 2, Options 1 and 2) and No Action Alternative A. The remaining alternatives from the PSPP PA/FEIS are being dismissed from further consideration.

As described in the Applicant's Revised Plan of Development (POD) (Palen Solar III, 2013), the PSEGS would be developed within the area identified and analyzed in the PSPP PA/FEIS as Reconfigured Alternative 2. Of the 5,200 acres within the requested ROW area, approximately 3,896 acres would be disturbed by the PSEGS. The PSEGS would not include any development of private property that was considered in connection with the PSPP. Key differences between the PSEGS and the action alternatives described and analyzed in the PSPP PA/FEIS include the PSEGS's two proposed 750-foot power towers, each topped by a 10-foot tall lightning rod and Federal Aviation Administration-required lighting and surrounded by 85,000 heliostat assemblies (a total of 170,000 heliostats are proposed); shift in the westernmost portion of the previously analyzed 7-mile long 230 kV gen-tie line to accommodate the relocation of the Red Bluff Substation and to align the transmission corridors of the PSEGS with the Desert Sunlight Project; installation of a new redundant telecommunications cable beneath the gen-tie line access road that would extend the length of the gen-tie line; and the upgrade and extension of an 8-inch natural gas supply pipeline for a distance of 2,960 linear feet from a new tap station on the main transmission line to the PSEGS site. Total disturbance area of the gas line would be approximately 3.6 acres. The natural gas supply line would be owned and operated by SoCal Gas pursuant to a separate ROW grant; the BLM is analyzing this work in the Draft SEIS as a connected action. Other key differences between the PSEGS and the action alternatives described and analyzed in the PSPP PA/FEIS include (relative to those other projects) the PSEGS's reduction in the number of proposed evaporation ponds from four 2-acre ponds to two 2-acre ponds, reduction in water use over the life of the project by approximately 99 acre-feet per year, and reduction in the amount of grading required within the solar plant site.

ES.8 Environmental Impacts

Direct and Indirect Effects of the PSEGS

The environmental effects of constructing, operating, maintaining, and decommissioning the PSEGS are summarized in Table ES-1. The direct and indirect environmental impacts of Reconfigured Alternative 2 (Option 1 and Option 2) and the No Action Alternative are described in the PSPP PA/FEIS and remain valid. As such, they require no supplement in Table ES-1. A side-by-side comparison of each of these alternatives will be provided in a consolidated Final EIS for the PSEGS following the consideration of comments received regarding this Draft SEIS.

Cumulative Impacts of all Alternatives

The cumulative scenario has been updated in Section 4.1 of this Draft SEIS to reflect changed conditions since issuance of the PSPP PA/FEIS and the cumulative effects analysis for all alternatives has been updated. The PSEGS is expected to cause or contribute to short-term and long-term cumulative effects. Cumulative effects could result from the combination of the incremental effects of the PSEGS (e.g., relating to the introduction of bright lights and tall structures into the desert environment, adverse effects to cultural resources and values and to avian and other species and their habitat, generation of air emissions, and other resources) and the effects of past, other present, and reasonably foreseeable future projects in a region that has undergone significant development. Based on recent resource management plan decisions that prioritize solar development in eastern Riverside County, significant development is expected to continue in the area.

TABLE ES-1
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	PSEGS Impact Summary
Air Resources	PSEGS construction could contribute to exceedances of the PM_{10} standards (24-hour and annual) and could cause exceedances of the 1-hour and 24-hour NAAQSs for NO_2 and $PM_{2.5}$, respectively. Adverse effects related to the creation of ozone resulting from construction of the PSEGS would occur. Operation of the PSEGS would contribute to existing exceedances of the PM_{10} standards (24 hour and annual) and the $PM_{2.5}$ (24-hour) standard. Emissions of other criteria pollutants (with the exception of the ozone precursor NO_2) would not adversely affect local or regional air quality. Adverse effects from ozone emissions resulting from operation of the PSEGS would occur.
Global Climate Change	PSEGS construction would generate a total of approximately 22,226 tons (20,163 metric tons) of CO2e per year. Project operations would emit, directly from primary and secondary emission sources, approximately 107,464 tons (97,490 metric tons) CO2e GHG emissions per year. Overall, when accounting for the loss of carbon sequestration (vegetation removal) and the displacement of fossil fuel-based energy, the PSEGS would resulting in an overall net reduction of GHG emissions of approximately 957,180 tons (868,349metric tons) of CO_2e per year.
Cultural Resources	The PSEGS footprint includes the same or a substantially similar number of sites that are eligible for listing on the NRHP as Reconfigured Alternative 2. The precise number of sites, including how many prehistoric and historical period sites eligible under which criteria, will be disclosed in the Final EIS for the PSEGS based on information and studies that are in progress as of the issuance of the Draft SEIS. Final determinations of the number and types of direct, indirect, and cumulative effects of the PSEGS are not known at this time.
Environmental Justice	No disproportionately adverse air quality, noise, or water impacts could result for minority residents of the primary study area and no disproportionately adverse socioeconomic, traffic, or health and safety impacts could result for minority residents of the secondary study area.
Lands and Realty	The PSEGS would occupy land within a corridor designated for energy generation and transmission. Once constructed, the land encompassed by the PSEGS and facilities, including portions of designated corridors, would not be available for placement of other sites or linear facilities.
Livestock Grazing	There are no livestock grazing allotments within or adjacent to the proposed PSEGS ROW application area. Therefore, no impacts would occur.
Mineral Resources	The PSEGS is expected to have a negligible and temporary effect on the availability of sand and gravel resources, and no significant impact on the availability of other mineral, gas, or geothermal resources.
Multiple Use Classes	The PSEGS would convert approximately 1 percent of all MUC-M lands in Eastern Riverside County to a single use for the duration of the project, thereby restricting multiple use opportunities on the PSEGS site to a single dominant use for the lifespan of the project. This restriction would be lifted upon closure and decommissioning of the project.

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	Proposed Action
Noise	PSEGS construction activities would be temporary in nature, and would not generate continuously high noise levels. Applicant proposed measures would reduce periodic increases in noise (e.g., high pressure steam blow) to prevent adverse impacts. Groundborne construction period vibration may be detectable by the nearest sensitive receptor, but not structurally damaging. Operational noise and vibration levels are not expected to be detectable at off-site receptors, and therefore would not be considered an adverse effect.
Paleontological Resources	The PSEGS construction (e.g., grading and excavation) has a probability of encountering paleontological resources. To the extent that paleontological resources are discovered in-tact and adequately preserved, the contribution to the science of paleontology would be beneficial. However, if such resources are destroyed in the course of subsurface disturbance, the loss would be permanent. Through proposed resource monitoring and mitigation efforts, the potential for adverse effects would be reduced.
Public Health and Safety	PSEGS construction activities present small risks to public health and safety associated with the use of construction equipment, handling and storage of hazardous materials, the use of explosives during construction and demolition, and encountering unexploded ordinance. Operational activities, including work in the vicinity of a natural gas pipeline, would increase worker safety risks. However, no short- or long-term adverse human health effects are expected in association with transmission line safety and nuisance hazards; traffic and transportation safety, including aviation safety; and worker safety and fire protection impacts; geologic hazards; or site security.
Recreation	Construction of the PSEGS would render the site unavailable for dispersed recreational opportunities, but would be expected to have only minimal impacts. Construction activities and operations could affect users' perception of solitude, naturalness, and unconfined recreation. Long term visitor areas could be slightly impacted due to an increase in project workforce or displacement due to project visibility.
Social and Economic	PSEGS construction would employ 998 daily workers (average) and 2,311 workers (peak). Most, if not all, expected to live within two hours of site. • Any temporary lodging demand met by existing housing or lodging. No new housing or motel development induced. • Construction labor payroll would be approximately $115 million per year. • Total economic output of up to $200 million per year. • *Operations:* Annual employment of 100 workers; most expected to live within two hours of site. • Any in-migration housing demand met by existing housing. No significant housing growth induced. Decommissioning and closure activities would induce a temporary spending and employment benefit from deconstruction and site restoration work. Subsequent long term adverse impact from lost project jobs and spending would be expected.
Soils Resources	PSEGS construction would involve approximately 200,000 cubic yards of grading. With the implementation of Applicant Proposed Measures, the proposed action would cause minimal wind or water erosion generated soil loss. The project has been configured to avoid direct impacts on sand transport areas. Therefore, operations activities would not be expected to have a significant adverse effect on sand transport or dune habitat.
Special Designations	The PSEGS could have minor impacts to wilderness users' opportunities for solitude and primitive unconfined recreation within the National System of Public Lands, including in wilderness areas under BLM and National Park Service management.
Transportation and Public Access – Off Highway Vehicle Resources	The PSEGS would make unavailable certain off-highway vehicle (OHV) routes, including open washes that traverse the site, displacing OHV users onto other routes. Impacts to traffic on I-10 due to construction activities would be temporary and measures would be implemented to minimize the potential for traffic hazards, thereby ensuring I-10 levels of service do not degrade to unacceptable levels. No adverse transportation impacts with respect to project operations would be expected.
Vegetation Resources	PSEGS construction would impact the following upland vegetation communities: 3,386 acres of Sonoran creosote bush scrub; 187 acres of partially stabilized dunes; 375 acres of ephemeral washes; and 206 acres of desert dry wash woodlands. In addition, the project could directly or indirectly impact the following special-status plants: Harwood's Wooly-star, Harwood's Milkvetch, Ribbed Cryptantha,

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource	Proposed Action
Vegetation Resources (cont.)	California Ditaxis, Palen Lake Atriplex, Utah Milkvine. Teddybear, silver cholla, pencil cholla, common fishhook cactus, and possibly one cottontop cactus would also be lost or salvaged from disturbed areas Lastly, construction activities and soil disturbance could introduce new noxious weeds and could further spread weeds already present in the project vicinity.
Visual Resources	The PSEGS would implement several measures to minimize adverse visual resource effects. With implementation of these measures, the following adverse effects would be expected to remain: • Visual impacts to surrounding viewer groups (all KOPs, except 17A) from the single, strong vertical power tower forms (2 total) that would contrast strongly with the natural forms of the horizon line. Additionally, the white light of the receiver at the top of the tower would present a unique and strong color contrast that generally would be very conspicuous, even at long distances. • Visual impacts to surrounding viewer groups (all KOPs, except 17A) from sunlight reflected off of the heliostat mirrors (glare). • Visual impacts due to the general level of visual contrast of the PSEGS in the landscape, and non-conformance with Interim VRM Class III objectives. • Unavoidable and adverse cumulative impacts for travelers along I-10 and dispersed recreational users in the McCoy, Big Maria, and Little Maria Mountains and wilderness.
Water Resources	PSEGS groundwater pumping/consumption of 400 AFY during construction and 201 AFY during operation could affect nearby wells. Site development would cause minor alteration of stormwater flows and drainage. Project facilities could increase the risk of floods and property damage. Construction and operation could impact water quality through potential erosion and associated increases in sediment loads to adjacent streams and washes and accidental spills of hydrocarbon fuels and greases associated with construction equipment or of solvents, paints, and concrete. No effect on flows in the Colorado River is anticipated.
Wildland Fire Ecology	Reduced vigor of groundwater-dependent plants as a result of PSEGS groundwater pumping could indirectly increase the risk of wildfire hazards. Spread of invasive species resulting from project construction could also indirectly increase wildfire risk. The probability of a wildfire to occur as a result of project construction or would be low due to the moderate-risk site conditions, normally extremely patchy fuel distribution, dry climate, and the proposed level of heavy equipment use. However, during extreme weather conditions, a grass fire originating at the site could spread up the slopes of the adjacent McCoy Mountains or spread toward other projects out of control and pose a risk to life and property, and the risk of fire as a result of project construction therefore is considered substantial. Operational fire risks could result from vehicle use, electrical transmission lines, and the use of high-pressured natural gas. These risks would be reduced through implementation of Applicant Proposed Measures related to public health and safety.
Wildlife Resources	The PSEGS would impact nearly 3,950 acres of habitat for native wildlife communities. Unquantified indirect losses to wildlife habitats and communities would occur adjacent and downwind from the project site, including habitat for desert tortoise, Mojave fringe-toed lizard, golden eagle foraging, American badger, burrowing owl, other special status and migratory birds, and kit fox, and would degrade and fragment adjacent wildlife communities, decreasing regional connectivity and dispersal of resident wildlife. Additionally, the proposed project is likely to promote the spread of invasive non-native plants and to subsidize desert tortoise predators. Construction, operation or maintenance activities could result in some death, harm, harassment, removal, or capture of wildlife, including eggs and nests and so constitute unavoidable loss of individual animals. Impacts to most wildlife resources could be addressed adequately through the implementation of identified APMs.
Wild Horse and Burros	There are no Wild Horse and Burro Herd Areas or Herd Management Areas within or adjacent to the PSEGS area or right-of-way application area. Therefore, no impacts to these animals would be expected.

CHAPTER 1
Introduction and Purpose and Need

1.1 Introduction

On February 8, 2013, Palen Solar III, LLC (PSIII), a wholly owned subsidiary of Palen Solar Holdings, LLC (PSH) submitted a Right-of-Way (ROW) application to the Bureau of Land Management (BLM) for a 500 MW concentrating solar technology facility (using power tower technology) and single circuit 230 kV power overhead transmission line (gen-tie line).

In 2008, the previous project proponent, Palen Solar I, LLC (PSI) a wholly owned subsidiary of Solar Millennium, filed a ROW application for a concentrating solar project that would use solar parabolic trough technology to generate electricity (Palen Solar Power Project or PSPP). In general, the PSPP would have involved arrays of parabolic mirrors to collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. An oil-based heat transfer fluid (HTF) contained in the receiver tube would be brought to high temperature (750°F) as it circulated through the receiver tubes. The HTF would be piped through a series of heat exchangers in the power block where it would release its stored heat to generate high pressure steam. The steam would then be fed to a traditional steam turbine generator where electricity would be produced.

The BLM, pursuant to its obligations under the Federal Land Policy and Management Act of 1976 (FLPMA) and National Environmental Policy Act (NEPA), prepared a Proposed Resource Management Plan Amendment/Final Environmental Impact Statement (and prior to that a Draft Resource Management Plan Amendment/Draft EIS) and began drafting a Record of Decision (ROD) for the PSPP. However, prior to finalizing the ROD, PSI informed the BLM that it would not likely construct the project as described in the PSPP PA/FEIS. Therefore, the BLM did not finalize the ROD, did not amend the resource management plan, and did not issue a ROW for the PSPP. On April 2, 2012, PSI along with other Solar Millennium US-based companies petitioned for relief in federal bankruptcy court. On June 21, 2012, the bankruptcy court conducted an auction and determined that BrightSource Energy, Inc. (BSE) was the approved bidder to acquire PSI's assets. On June 29, 2012, PSI submitted a SF 299 application to the BLM to transfer the existing application (CACA 48810) from PSI to PSIII, at the time a wholly owned corporation of PSI. On July 19, 2012, the BLM decided to accept the transfer of the application to PSIII. On June 21, 2012, the bankruptcy court approved the transfer and BSE acquired all rights to PSIII.

The BLM is supplementing the analysis in the Final EIS for the PSPP in accordance with the NEPA regulations (40 CFR §1502.9(c)) to address the new technology and project configuration being proposed by PSIII, referred to as the Palen Solar Electricity Generating System Project (or PSEGS). Agencies are required to prepare supplements to either draft or final environmental impact statements if: (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. A supplemental EIS must provide a basis for rational decision-making and give the public and other agencies an opportunity to review and comment on the analysis of the changes or new information (BLM NEPA Handbook H-1790-1 (2008) at §5.3).

Supplementing is used to meet the purposes of NEPA as efficiently as possible, avoiding redundancy in the process. A supplemental EIS either may incorporate by reference the relevant portions of the EIS being supplemented or may circulate the entire EIS along with the supplemental EIS. For the PSEGS, the entire PSPP PA/FEIS is being circulated along with the Draft SEIS; it is included as Appendix B. When a supplement is prepared after circulation of a Final EIS (as is the case here), the agency must prepare and circulate a Draft Supplemental EIS (Draft SEIS) and then prepare and circulate a Final EIS (Final EIS), unless alternative procedures are approved by the Council on Environmental Quality (CEQ) (40 CFR §1502.9(c)(4); BLM NEPA Handbook H-1790-1 (2008) at §5.3). This Draft SEIS supplements and does not replace the May 2011 PSPP PA/FEIS. Following receipt of comments on the Draft SEIS, the BLM will prepare a new Final EIS that consolidates relevant analysis from the PSPP PA/FEIS and the Draft SEIS into a single, comprehensive document.

1.2 BLM's Purpose and Need

The statement of BLM's Purpose and Need for action that is provided in Section 1.1.1 of the PSPP PA/FEIS (p. 1-2) remains valid, although the discussion of the concurrent amendment of the California Desert Conservation Area (CDCA) Plan of 1980, as amended merits further discussion. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation that are not identified in the CDCA Plan to be added to it through the land use plan amendment process. Additionally, the CDCA Plan, as amended, requires that transmission lines above 161 kV be placed with in designated corridors.

The proposed PSEGS solar plant site is within the CDCA, but is not identified in the CDCA Plan for solar power generation; the gen-tie line pathway also is within the CDCA, but the route is not fully within a designated corridor identified in the CDCA Plan. Therefore, if the BLM decides to approve the issuance of a ROW grant, two CDCA Plan amendments also would be required. One Plan Amendment would 'allow' the solar generation facility; the other Plan Amendment would 'allow' the gen-tie line outside of a designated corridor. To inform the Plan Amendment decisions, the BLM will rely on the environmental and other analysis set forth in the PSPP PA/FEIS issued by the BLM in May 2011 as supplemented by the Draft SEIS and revised in response to comments received, all of which will be consolidated in a new Proposed Resource Management Plan Amendment/Final EIS for the PSEGS. Section 4.8.7 of PSPP PA/FEIS includes an analysis of the Plan Amendment to allow the solar generating facility; Section 4.8.7

of the Draft SEIS includes an analysis of the Plan Amendment to allow the gen-tie line outside of a designated corridor.

1.3 Applicant's Project Objectives

The primary objective of the PSEGS is to deliver 500 MW of renewable electrical energy to the regional electrical grid to fulfill the existing approved Power Purchase Agreements (PPAs) for electrical sales from the facility. Specifically, PSIII searched for a site that had been permitted for construction of a solar thermal power plant, was large enough to accommodate BSE Power Tower Solar Technology, was included within a BLM designated Solar Energy Zone (SEZ), and had an executed and approved Large Generator Interconnection Agreement (LGIA) for interconnection to a substation that would be operational in time to meet delivery of electricity under current California Public Utilities Commission (CPUC) Approved PPAs.

The PSEGS site is included in the BLM designated Riverside East SEZ, has an existing license that was granted by the California Energy Commission (CEC) that includes all state authorizations (this license is currently is being considered by the CEC for amendment as part of a process that is independent of the BLM's consideration of the requested ROW), a National Historic Preservation Act (NHPA) Section 106 Programmatic Agreement covering the PSPP, a Biological Opinion issued by the United States Fish and Wildlife Service for the PSPP, and has been the subject of prior environmental analysis under state and federal law, including a Staff Assessment/Draft EIS prepared jointly by the CEC and the BLM (CEC and BLM, 2010) and the PSPP PA/FEIS prepared by the BLM in May 2011. The site has an approved LGIA for 500 MW to interconnect at the Red Bluff Substation which is currently under construction. The LGIA is particularly important because FERC approved "abandoned plant treatment" for the original PSPP. The abandoned plant status allowed Southern California Edison (SCE) to begin construction on the Red Bluff Substation and downstream upgrades essential to support the transmission infrastructure to import renewable energy from eastern Riverside County to other parts of Southern California. Abandoned plant treatment status, however, tasks California ratepayers with responsibility to fund these improvements directly in advance of the delivery of electricity from a solar energy generation facility on the site. Successful construction of a 500 MW project will allow the ratepayers to recoup their transmission infrastructure investment.

In addition, PSIII's objectives for the PSEGS encompass the state and federal goals for development of renewable energy on public land as described in the PSPP PA/FEIS. The size and surrounding environment of the proposed site is suited to the development of the next generation of BSE's proprietary solar power tower technology. BSE's latest tower design improvements allow for the development of a project that minimizes land consumption on a megawatt-hour (MWH) per acre basis. Providing the economic viability of this innovative design is consistent with national policy, which encourages the development of new or significantly improved technologies to "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases . . . ." (See, e.g., 42 USC §16513(a).

1.4 Major Authorizing Laws and Regulations

The primary agency-specific authorizing laws and regulations summarized in Section 1.2 of the PSPP PA/FEIS (p. 1-4 et seq.) are further described in PSPP PA/FEIS Chapter 5 (p. 5-1 et seq.), and have been updated as appropriate in Chapter 5 of the Draft SEIS.

1.5 Relationship of the PSEGS to BLM Policies, Plans, and Programs, and Land Use Plan Conformance Determination

The relationship of the PSPP to the BLM’s existing policies, plans and programs was described in the Final EIS (PSPP PA/FEIS §1.3, p. 1-7) and has been updated as necessary below.

1.5.1 Relationship of the PSEGS to the Solar PEIS

The PSPP PA/FEIS describes the Programmatic EIS for Solar Energy Development in Six Southwestern States (Solar PEIS) on page 5-11. After the issuance of the PSPP PA/FEIS, the BLM issued the Final Programmatic EIS for Solar Energy Development in Six Southwestern States (Arizona, California, Colorado, Nevada, New Mexico, and Utah) in July 2012 and signed the associated Record of Decision on October 12, 2012. The PSEGS application is not subject to the Solar PEIS ROD or the CDCA Plan amendments made as a result of that decision. Appendix B of the Solar PEIS ROD defines “pending” applications as “any applications… filed within SEZs before June 30, 2009.” The PSPP application (CACA-48810) was filed in 2008, in an area included in the Riverside East Solar Energy Zone. On June 29, 2012, Palen Solar I submitted a SF 299 application to the BLM to transfer the PSPP (CACA 48810) application from Palen Solar I to Palen Solar III, a wholly-owned subsidiary of Palen Solar I. Concurrently, BrightSource Energy created a new project company, Palen Solar Holdings, LLC, which is the sole owner of Palen Solar III. For this reason, the BLM has determined that the PSEGS application has the same filing date as the PSPP application. Section B. 1.2 of the Solar PEIS ROD (p. 146) states, “Pending applications are not subject to any of the decisions adopted by this ROD.” Consequently, the PSEGS application is not subject to the Solar PEIS ROD or to the CDCA Plan amendments made in that decision; instead, it remains subject to the pre-Solar PEIS ROD requirements of the CDCA Plan.

1.5.2 Relationship of the PSEGS to the California Desert Renewable Energy Conservation Plan (DRECP)

The PSPP PA/FEIS summarizes the DRECP on page 5-11 and concludes that “because the DRECP process remains underway, it does not govern the BLM’s consideration of the [PSPP] and alternatives.” As of July 1, 2013, preparation of the Draft DRECP and EIR/EIS remain in progress. Issuance of the Draft EIS is expected late summer 2013, and consideration of a ROD is not expected to occur until 2014. Because the DRECP process has not yet been completed, it is not expected to govern the BLM’s consideration of the PSEGS.

Nonetheless, even if a DRECP ROD is signed before the PSEGS Final EIS and ROD are completed, the land use allocation decisions made in the DRECP ROD would not affect the PSEGS if the PSEGS meets either of the following criteria:

1. The PSEGS is proposed in a BLM Solar Energy Zone and is considered a "pending project" under the Solar PEIS (i.e., the application was filed before June 30, 2009); or
2. The a Draft EIS has been published for the PSEGS no later than 60 days after release of the Draft EIS for the DRECP provided the Final EIS for the PSEGS includes:
    a) Analysis using the best available information at the time of publication, including data developed in support of DRECP conservation and recreation strategies, and
    b) Analysis describing the relationship between the PSEGS and the DRECP conservation and recreation strategies.

Because the PSEGS meets both (even though meeting one alone would enough to exempt the PSEGS from the land use allocation decisions that are expected to be made in the DRECP), the DRECP does not govern the BLM's consideration of the PSEGS.

1.5.3 Land Use Plan Conformance and Consistency

This section supplements the information and analysis of the Land Use Plan Conformance and Consistency discussion that was provided in Section 1.3.2 of the PSPP PA/FEIS by describing the PSEGS's relationship to the CDCA Plan and Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan).

California Desert Conservation Area Plan

To accommodate the PSEGS or any of the build alternatives, the CDCA Plan must be amended because sites associated with power generation or transmission not identified in the Plan will have to be considered through the Plan Amendment process. Neither the PSEGS solar plant site nor the proposed gen-tie line route currently is identified in the CDCA Plan for these intended uses.

Statement of Plan Amendment

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA lists a number of Category 3 amendments that have been approved since adoption of the CDCA Plan in 1980. Two additional amendments are proposed to be added to this section of the CDCA, and would read "The Palen solar energy facility is allowed." And "The Palen solar facility gen-tie is allowed outside of a designated corridor."

Plan Amendment Process

The Plan Amendment process is outlined in Chapter 7 of the CDCA Plan. In analyzing an applicant's request for amending or changing the plan, the BLM District Manager, Desert District, will evaluate each of the considerations listed below. For the Amendment that would read "The Palen solar energy facility is allowed," analysis is provided in Section 4.8.7 of the

PSPP PA/FEIS, *Land Use Plan Amendment Consistency Analysis*; for the Amendment that would read "The Palen solar facility gen-tie is allowed outside of a designated corridor," analysis is provided in Section 4.8.7 of the Draft SEIS.

1. Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment;
2. Determine if alternative locations within the CDCA are available that would meet the applicant's needs without requiring a change in the plan's classification, or an amendment to any plan element;
3. Determine the environmental effects of granting and/or implementing the applicant's request;
4. Consider the economic and social impacts of granting and/or implementing the applicant's request;
5. Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from Federal, State, and local government agencies; and
6. Evaluate the effect of the proposed amendment on BLM management's desert-wide obligation to achieve and maintain a balance between resource use and resource protection.

Decision Criteria for Evaluation of a Proposed Plan Amendment

The decision criteria to be used for approval or disapproval of the proposed plan amendment require the BLM Desert District Manager to make following determinations:

1. The proposed plan amendment is in accordance with applicable laws and regulations; and
2. The proposed plan amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM Desert District Manager will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required by FLPMA.

Decision Criteria for Evaluation of Application

In addition to defining the required analyses and decision criteria for plan amendments, the CDCA Plan also defines the decision criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These criteria include:

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; and
9. Consider corridor networks which take into account power needs and alternative fuel resources.

Northern and Eastern Colorado Desert Coordinated Management Plan

As described in PSPP PA/FEIS Section 1.3.2 (p. 1-12), the BLM's NECO Plan amended the CDCA Plan in 2002 to make it compatible with desert tortoise conservation and recovery efforts. The NECO Plan is a landscape-scale planning effort that covers most of the California portion of the Sonoran Desert ecosystem, including over five million acres and two desert tortoise recovery units. The PSEGS described in Chapter 2 of this Draft SEIS and alternatives described in the PSPP PA/FEIS are consistent with the NECO plan, and no NECO Plan amendment is proposed as part of this action.

1.6 Interagency Coordination

Interagency coordination is addressed in PSPP PA/FEIS Section 1.4 (p. 1-13). Specifically to consider the PSEGS, the BLM has sought comments from, and worked closely with, other regulatory agencies that administer laws, ordinances, regulations and standards that may be applicable to the PSEGS. These agencies include the U.S. Environmental Protection Agency, USFWS, National Park Service, USACE, Federal Aviation Administration, U.S. Marine Corps, U.S. Air Force, CEC, State Water Resources Control Board/Regional Water Quality Control Board, State Historic Preservation Office, CDFW, California Department of Transportation, and the Mojave Desert Air Quality Management District. Further, the BLM has notified affected Indian tribes regarding the PSEGS, has sought their comments, and has invited them to consult on the PSEGS on a government-to government basis (see also, Section 1.4.4, *Tribal Consultation*).

1.7 Issues Analyzed in this Draft SEIS

This Draft SEIS supplements the PSPP PA/FEIS (provided in Appendix B) by analyzing the direct, indirect and cumulative effects of the PSEGS and re-analyzing the cumulative effects of all of the alternatives that have been carried forward for detailed analysis (see Chapter 2). All of the issue areas considered in the PSPP PA/FEIS have been revisited in the Draft SEIS. Agencies and members of the public have expressed PSEGS-specific concerns relating to impacts to avian species and other biological resources due to solar flux and other aspects of the proposed use of solar thermal power tower technology; impacts to visual resources and cultural values due to the increased viewshed from which the 760-foot (total height) power towers and high intensity safety lighting could be seen; and impacts to pilots in the affected airspace and drivers along I-10 due to anticipated glint and glare from facility lighting.

1.8 Organization of the Draft SEIS

As a document intended to supplement the information in the PSPP PA/FEIS, this Draft SEIS does not repeat or replace the information and analysis presented in the PA/FEIS. The format for this document generally follows the organization of the PSPP PA/FEIS. A copy of the PA/FEIS is provided as Appendix B to this document on a CD-ROM (if reviewing a paper copy), or as a separate electronic file if reviewing the Draft SEIS document electronically. The specific sections included in the Draft SEIS and the type of information to be found in those sections is described below.

Chapter 1 – Introduction, Purpose and Need

This chapter provides background information for the PSEGS and the purpose of and need for the agency action. It also describes the BLM land use plan amendment process.

Chapter 2 – Proposed Action and Alternatives

This chapter fully describes the proposed PSEGS to be analyzed in the Draft SEIS. This chapter also describes the alternatives analyzed in the 2011 PSPP PA/FEIS that are being carried forward for consideration and the rationale.

Chapter 3 – Affected Environment

This chapter describes the affected environment associated with the construction, operation, maintenance, and decommissioning of the PSEGS. Where this information has not changed since the issuance of the PSPP PA/FEIS, the Draft SEIS provides a cross reference and does not repeat it. By contrast, where the affected environment is new or has changed (e.g., in connection with the proposed gen-tie line reroute, natural gas line work, and resource areas such as visual resources), the Draft SEIS supplements the data and other information that was provided in the PSPP PA/FEIS.

Chapter 4 – Environmental Effects

This chapter describes possible environmental consequences of the PSEGS. This chapter also updates the cumulative scenario from the PSPP PA/FEIS and evaluates the cumulative effects of the proposed PSEGS and the alternatives being carried forward for consideration in the Draft SEIS based on the updated cumulative scenario.

Chapter 5 – Consultation and Coordination

This chapter describes public participation undertaken to date, and additional opportunities that would occur throughout the Draft SEIS process. It also lists agencies and organizations that will receive copies of the Draft SEIS for review and lists the preparers of the document.

CHAPTER 2

Proposed Action and Alternatives

On February 8, 2013, Palen Solar III, LLC (PSIII), a wholly owned subsidiary of Palen Solar Holdings, LLC (PSH) (Applicant)[1] submitted a revised Plan of Development (POD) describing a new alternative to be considered by the Bureau of Land Management (BLM) the BLM in the context of the Palen Solar Power Project (PSPP) (CACA-48810). Impacts of the PSPP and alternatives to the PSPP were analyzed in the Proposed Resource Management Plan Amendment/ Final EIS for the PSPP issued in May 2011 (PSPP PA/FEIS). The new alternative is referred to as the Palen Solar Electric Generating System (PSEGS). The PSEGS would involve a different solar technology than the one analyzed in the PSPP PA/FEIS, a modified site layout within the previously analyzed project area, and new components in areas that were not analyzed in the PSPP PA/FEIS, including a portion of the previously analyzed generation tie (gen-tie) transmission line that would be rerouted, a new redundant telecommunications cable, and a natural gas supply pipeline that would be upgraded and extended from existing infrastructure owned and operated by Southern California Gas (SoCal Gas).

The regional location of the site is described on PSPP PA/FEIS page 2-1 as within the California inland desert, 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 (Figure 2-1). The boundaries of the 5,200-acre ROW requested for the PSEGS are substantially the same as for the PSEGS, although the PSEGS would disturb fewer acres (approximately 3,896 acres) of BLM-administered lands relative to the action alternatives analyzed in the PSPP PA/FEIS, would shift the westernmost portion of the previously analyzed 7-mile long 230 kV gen-tie line to accommodate the relocation of the Red Bluff Substation and to align the transmission corridors of the PSEGS with the Desert Sunlight Project, and would involve the upgrade and extension of an 8-inch natural gas supply pipeline for a distance of 2,960 linear feet from a new tap station on the main transmission line to the PSEGS site. Total disturbance area of the gas line would be approximately 3.6 acres. The natural gas

[1] In 2008, the previous project proponent, Palen Solar I, LLC (PSI) a wholly owned subsidiary of Solar Millennium, filed a ROW application for the PSPP: a concentrating solar project that would use solar parabolic trough technology to generate electricity. On April 2, 2012, PSI along with other Solar Millennium US-based companies petitioned for relief in federal bankruptcy court. On June 21, 2012, the bankruptcy court conducted an auction and determined that BrightSource Energy, Inc. (BSE) was the approved bidder to acquire PSI's assets. On June 29, 2012, PSI submitted a SF 299 application to the BLM to transfer the existing application (CACA 48810) from PSI to PSIII, at the time a wholly owned corporation of PSI. On July 19, 2012, the BLM decided to accept the transfer of the application to PSIII. On June 21, 2012, the bankruptcy court approved the transfer and BSE acquired all rights to PSIII. Concurrent with its filing of the SF 299 with the BLM, BSE created a new project company, Palen Solar Holdings, LLC (PSH), which is the sole owner of PSIII and a joint venture of BSE and Abengoa. PSH is the applicant (Applicant) for the PSEGS.

supply line would be owned and operated by SoCal Gas pursuant to a separate ROW grant; the BLM is analyzing this work in the Draft SEIS as a connected action. Although development of the PSPP would have occurred on approximately 280 acres of private land, the PSEGS would involve no development of privately-owned property. Compare, for example, Figure 2-2 (which shows BLM-administered lands in tan and privately-owned property in gray) to PSPP PA/FEIS Figures 2-4 and 2-5 (Reconfigured Alternative 2, Options 1 and 2, respectively). Figures in this Draft SEIS are included in Appendix A; figures in the PSPP PA/FEIS are included in Draft SEIS Appendix B.

The BLM has determined that, should the requested ROW be authorized, two amendments to the CDCA Plan would be required: one to identify the site as suitable for the proposed energy generation and to allow the proposed solar facility and one to allow transmission outside of a designated corridor. The potential effects of these CDCA Plan Amendment decisions on the human environment were analyzed, in part, in the PSPP PA/FEIS (BLM, 2011) and are further analyzed in this Draft SEIS.

2.1 PSEGS

2.1.1 Right-of-Way Application Area

The Applicant has filed an application for a ROW to construct, operate, maintain, and decommission a 500 MW concentrating solar facility (power tower technology) and single circuit 230 kV overhead transmission (gen-tie) line and telecommunications cable on BLM-administered land. As noted above, the PSEGS would be developed on 3,896 acres of public lands that are entirely within the 5,200-acre proposed ROW application area; the PSEGS would not include any development of private property that was considered in connection with the PSPP. The PSEGS area is shown in Figures 2-1 and 2-2.

2.1.2 Site Selection and Project Design

The Applicant searched for a site where it could secure control within a reasonable timeframe, using a reasonable effort at a reasonable cost using the following selection criteria. In choosing a location for the project, the Applicant sought a site:

1. for which some of the environmental analyses and regulatory authorizations for construction of a solar thermal power plant had been completed and/or obtained (e.g., Staff Assessment/Draft EIS and CEC License,);
2. large enough to accommodate BrightSource technology;
3. within a BLM designated Solar Energy Zone; and
4. with an executed and approved Large Generator Interconnection Agreement (LGIA) for interconnection into a substation that would be operational in time to meet delivery of power.

The PSPP was the subject of a joint Staff Assessment/ Draft EIS and a Final EIS for a ROW grant request and proposed CDCA Plan Amendment. While some impacts of the PSEGS differ from those of the PSPP, many of the environmental issues (particularly those associated with ground disturbance and water use at the site) are similar and have been evaluated thoroughly in the PSPP PA/FEIS. The PSEGS has been sited and designed to address many of the resource conflicts that were disclosed in the PSPP PA/FEIS. For example the PSEGS site boundary was selected to reflect the Agency Preferred Reconfigured Alternative 2 (Option 1 and Option 2), which was developed to reduce direct and indirect impacts to Mojave fringe toed lizard habitat. Post development drainage was designed to eliminate the large drainage channels, and the site grading plan incorporates methods to reduce ground disturbance during construction and operation. The Applicant also has adopted, with minor revision to reflect changes in technology, many of the applicable CEC Conditions of Certification and Compliance Verifications and BLM-identified mitigation measures which appear in the PSPP PA/FEIS. Such measures are referred to in this document as Applicant Proposed Measures (APMs) for the PSEGS. The APMs are discussed more fully in Section 2.2.7 and presented in Appendix C.

2.1.3 Major Project Components

The major components of the PSEGS, which are described in detail in the sections that follow, include:

1. two solar fields;
2. two power blocks with the electrical generating capacity of 250 MW each for a combined capacity of 500 MW;
3. one project electrical switchyard;
4. one common facilities area that will include an administrative and maintenance building and two 2-acre evaporation ponds;
5. one temporary construction laydown area located within the common facilities area;
6. an internal roadway system consisting of spoke, ring, and perimeter roadways;
7. a new 8-inch diameter, 2,960 linear-foot natural gas pipeline extension
8. a main access road from the I-10/Corn Springs Road interchange;
9. a secondary access road, which would be constructed within the natural gas pipeline corridor
10. a single circuit 230 kV generation tie-line electric transmission line and communication cable extending from the project electricity switchyard to the Red Bluff Substation; and
11. a redundant telecommunications cable installed beneath the roadway along the gen-tie route.

The PSEGS is proposed to be constructed in two phases. Approximate dimensions of various Project components constructed within each phase are provided in Table 2-1.

TABLE 2-1
GENERAL PROJECT DIMENSIONS

PSEGS Rev C-1000				**Construction**	
POD Elements			**Acres**	**Phase I**	**Phase II**
Access Road Outside of Fenced Area	Main Access Road		0.58	0.58	0
	Main Access Road Shoulders		0.36	0.36	0
	SCE 161kV Corridor Crossing		0.06	0.06	0
		Total	**1.0**	**1.0**	**0**
Common Area / Construction Laydown Area Inside Fenced Area	Common Area Facilities		3.83	3.83	0
	Evaporation Ponds		4.65	4.65	0
	Batch Plant		4.01	4.01	0
	Visitor Parking		0.78	0.78	0
	Natural Gas Metering Yard		0.67	0.67	0
	Asphalt Road		4.56	4.56	0
	Perimeter Fence (buffer area)		1.47	1.47	0
	Construction Laydown Area		28.38	28.38	0
	Unused Area		169.69	169.69	0
		Total	**218.0**	**218.0**	**0**
Solar Field Fenced Area	Unit 1	Power Block	12.66	12.66	0
		Inner Solar Field	130.78	130.78	0
		Heliostat Drive Zones	97.73	20.43	77.30
		Heliostat Field Area	1,402.48	295.25	1,107.23
		Unit 1 Total	***1,643.65***	***459.12***	***1,184.53***
	Unit 2	Power Block	12.66	12.66	0
		Inner Solar Field	130.16	130.16	0
		Heliostat Drive Zones	112.91	0.09	112.82
		Heliostat Field Area	1,627.51	2.22	1,625.29
		Unit 2 Total	***1,883.24***	***145.13***	***1,738.11***
	Access Roads	Asphalt Roads	5.94	5.94	0
		Improved Dirt Roads	30.11	9.43	20.68
		Access Road Total	***36.05***	***15.37***	***20.68***
	Switch Yard	Fenced Yard	2.96	2.96	0
		Fence buffer area	0.66	0.66	0
		Switch Yard Total	***3.62***	***3.62***	***0***
	Perimeter Fence (buffer area)		**8.96**	**1.27**	**7.69**
		Total	**3,575.5**	**624.5**	**2,951.0**
Natural Gas Pipeline (including Secondary Access Road)	SoCal Gas Corridor		**3.56**	**3.56**	**0**
Gen-Tie 120-Foot Wide Corridor (including redundant communications cable)	PSPP Corridor (Permitted Section)		81.92	81.92	0
	PSEGS Corridor (Revised Section)		18.94	18.94	0
		Total	**100.9**	**100.9**	**0**
		PSEGS Rev C-1000 TOTAL ACRES	**3,898.965**	**948.06**	**2,951.0**

SOURCE: Palen Solar III, LLC, 2013 (Table 2-3)

2.1.4 Power Plant Features

The PSEGS would use solar tower power technology to generate electricity. With this technology, arrays of heliostats collect heat energy from the sun and refocus the radiation on a centrally located power tower receiver, or Solar Receiver Steam Generator (SRSG). Photographs of existing power tower receivers are presented in Appendix A (see figure 4.18-2). Energy from the heliostats heats water in the SRSG into superheated steam. The steam then is routed into a steam turbine generator (STG), where the energy in the steam is converted into electricity. After passing through the steam turbine, the exhaust steam is directed to an air cooled condenser.

Solar Fields

The main components of the PSEGS are the two proposed solar fields. Each solar field would contain heliostats that would surround the power block and power tower. The total acreage for the solar field for Unit 1 would be approximately 1,643 acres and for Unit 2 would be approximately 1,883 acres. Both areas would be irregularly shaped. Preliminary plans for the PSEGS solar fields are shown in Figure 2-3.

The two power plants each would have a solar field consisting of heliostats mounted on pylons inserted into the ground surface using pre-augering and vibratory techniques. The ground surface within the solar field would not be graded or disturbed except to construct the “spoke” roads from the power block to the outer edge of the solar field. Ring roads would be utilized in the heliostat field to install the heliostat mounting pylons. These roads would not be bladed or graded, but instead would be cleared and grubbed only. Heliostat installation would maintain natural land contours to ensure that the PSEGS does not significantly affect surface drainage patterns or storm runoff. Vegetation in the solar field would be mowed to a height of 12 to 18 inches and be subject to invasive plant and weed management measures.

No heliostat would be built closer than 260 feet from the solar power tower location. The arrangement of the heliostats within the solar field is designed for maximum efficiency. The area immediately adjacent to the tower would contain the power block and is designated as a ‘heliostat’ free zone. Heliostats located closest to the tower and just outside the heliostat free zone would be more densely-packed than the mirrors located farther from the tower to maximize collection of solar energy. In this zone, there would be no concentric roads separating the heliostats for vehicular access; mirror washing in this zone would be performed by a small mirror washing machine.

Each of the heliostat assemblies is composed of two mirrors, each approximately 12 feet high by 8.5 feet wide, with a total reflecting surface of 204.7 square feet. Each heliostat assembly would be mounted on a single pylon, along with a computer-programmed aiming control system to direct the motion of the heliostat to track the movement of the sun. Communication between the heliostats and the operations center would be done via surface-mounted anchored cable or wireless remote system. The final layout would be completed during detailed design, but is expected to consist of up to 85,000 heliostats in each solar field.

Power Blocks

The PSEGS would consist of two power blocks, each located generally in the center of a solar field to efficiently capture the solar output of that solar field. The power blocks would be identical and would encompass approximately 13 acres each.

Each solar plant would include a power block consisting of a solid concrete solar power tower supporting the SRSG, one Rankine-cycle non-reheat steam turbine generator (STG), and the supporting auxiliary equipment identified below. The auxiliary equipment would be constructed approximately at the center of each solar plant:

1. boiler feedwater and condensate pumps
2. feedwater heaters
3. deaerator
4. condensate polisher
5. wet surface air cooler
6. air cooled condenser for main process steam
7. transformers
8. emergency diesel generators
9. diesel and motor-driven fire pumps
10. natural gas auxiliary boilers

The height of the SRSG would be 750 feet above grade level; it would be topped by a lightning rod that is approximately 10 feet tall and Federal Aviation Administration (FAA)-required lighting. The FAA-required lighting would be mounted to the top of the SRSG and be less than 10 feet in height. Therefore, the total height for the structure would be 760 feet.

Each solar plant would contain a nonreheat, Rankine-cycle, condensing STG with gland steam system, lubricating oil system, hydraulic control system, and steam admission/induction valving. High pressure (HP) steam from the SRSG superheater would enter the HP steam turbine section and expand through multiple stages of the turbine, driving a generator to produce electricity. On exiting the Low Pressure (LP) turbine, the steam would be directed into the air-cooled condenser.

The turbine would consist of high/intermediate pressure and low pressure sections. Superheated steam enters the HP turbine casing at 2,466 pounds per square inch absolute (psia) and 1,085 degrees Fahrenheit (°F) at the Normal Continuous Rating. Following expansion through the HP turbine, the steam would be conveyed to the inlet of the intermediate pressure (IP) turbine.

Exhaust steam from the turbine would be directed to the air cooled condenser. The PSEGS would include two dry-cooling systems, including two 120-foot air-cooled condensers, one for each power tower structure. The air-cooled condenser would blow ambient air across a heat transfer surface area to cool and condense the steam. The condensed steam would be gathered in a condensate tank and returned to the power tower receiver through a series of feedwater heaters and pumps. The air-cooled condenser is expected, under normal operation, to operate at a pressure of 3.25 inches of mercury absolute (approximately 1.6 psia).

The power tower superstructure would be a hollow cylinder constructed of reinforced concrete using a slip form, hoists, and cranes.

Electrical Switchyard

The Electrical Switchyard would be located in the northern portion of the project site and encompass approximately 3.62 acres. The onsite 230-kV switchyard would consist of six 230-kV sulfur hexafluoride (SF6) gas-insulated power circuit breakers arranged in a breaker-and-a-half configuration. The switchyard and all associated equipment would be designed for the maximum short-circuit and load-flow design conditions for the installation projected at least 25 years into the future. The switchyard would accept two generation feeds and two 230-kV lines connecting to the electrical grid. The switchyard would have a switchyard control building designed to accommodate all protection and control equipment, alternating current (AC) and direct current (DC) station power equipment and building HVAC equipment.

Common Facilities Area

The common facilities area would be located in the southwestern portion of the project site immediately south and west of the existing SCE 161 kV transmission line. The common facilities area would accommodate an administrative building, warehouse, maintenance complex, a meter/valve station for incoming natural gas service to the site and parking. The common area also would include groundwater supply wells, water and waste water treatment systems, a gas metering station, and two 2-acre evaporation ponds to serve the solar plants. The administration complex would be served by power from the local 12.47 kV distribution system and water from water supply wells located in the common facilities area. It would encompass approximately 14 acres and be largely rectangular. See Figure 2-4.

Temporary Construction Laydown Area

The temporary construction laydown area would encompass approximately 28 acres located north of the common facilities area and west of the existing SCE 161 kV transmission line. The laydown area would be used for equipment laydown, construction parking, construction trailers, a tire cleaning station, heliostat assembly, a temporary concrete batch plant and other construction support facilities. The surface areas within the temporary construction laydown area that are to be used frequently would be stabilized and dust suppression would be maximized with a layer of crushed stone in areas subject to heavy daily traffic. The proposed temporary construction laydown area has been sized large enough to allow the staging of deliveries and truck and worker ingress and egress to the site to avoid stacking on the I-10/Corn Springs interchange. Additional construction laydown and temporary use areas would be located near the power block in each plant. Preliminary plans for the temporary construction laydown area are shown in Figure 2-5.

Internal Roadway System

The internal roadway system would consist of a perimeter road, ring roads, spoke roads and drive zones (see Figure 2-3). Impermeable surfaces for roads only would be used on spoke roads that require heavy haul access to the power block and within the construction logistics area. The PSEGS would construct a permanent unpaved perimeter road inside the security fence along the entire perimeter of the facility. The perimeter road would be approximately 12 feet wide. The road system as a whole is proposed to disturb a total of approximately 36 acres.

Each solar field would have a road that would be a 20-foot-wide paved or hardscape access road from the entrance of the Project site to the power block, and then around the power block.

In addition to the ring roads for each unit, 12-foot wide unpaved spoke roads would radiate from the power block to provide access through the solar field to the ring roads. Within the heliostat fields, 10-foot wide “drive zones” would be located concentrically in the field to provide access to the heliostat mirrors for maintenance and cleaning. The drive zones would be cleared, grubbed, smoothed, and rolled and located approximately 140-170 feet apart.

Main Access Road

Main site access would be provided through a new, 1,350-foot long, 24-foot wide, paved road. The access road would be constructed from a point just north of the I-10/Corn Springs Road entrance/exit ramps east to the PSEGS site entrance. The new entrance road would enter the site at its western-most extent, near the temporary construction laydown area. This road would include a 12-foot wide shoulder with gravel surface for truck staging on one side to preclude traffic interferences. Anticipated and permanent disturbances are based on an estimated 59-foot permanent disturbance (24-foot roadway width, plus a 12-foot wide shoulder on one side and a 3-foot wide shoulder on the other and a 10-foot ditch on either side).

Generation Tie-Line and Telecommunication Cable

Electricity generated by the PSEGS would be conveyed to the Devers-Palo Verde #2 (DPV2) 500 kV regional transmission line through an electricity generation tie line (gen-tie line) constructed between the PSEGS electrical switchyard and the Red Bluff Substation. The Red Bluff Substation is located adjacent to and on the south side of I-10, west of the PSEGS site.

The gen–tie line proposed for the PSEGS is essentially the same as was proposed for the PSPP except for a minor route adjustment near the western end of the route and around the substation. This adjustment would be required to align the PSEGS gen-tie line immediately adjacent to the NextEra Desert Sunlight gen-tie line, minimize crossings over I-10, and ensure easy entry into the Red Bluff Substation nearest the PSEGS breaker position, which was relocated as part of the Red Bluff final design subsequent to publication of the PSPP PA/FEIS. Figure 2-2 shows the proposed gen-tie line alignment. A steel monopole design would be used for the gen-tie line. This analysis assumes the poles’ base diameter would be 6 feet and the top diameter would be 3 feet; the poles would be spaced approximately 1,100 feet apart (Galati, 2013). The number of poles required for the PSEGS would be greater than that for the PSPP. No permanent spur roads would be required to maintain the gen-tie line; however, there would be a maintenance access road along the route. Table 2-2 shows the general characteristics of the proposed gen-tie line.

Redundant Telecommunications Cable

In addition to the telecommunications cable that would be included on the gen-tie line, a redundant fiber optic telecommunications cable would be constructed between the PSEGS site and the Red Bluff Substation. The PSPP proposed to construct its redundant telecommunications

TABLE 2-2
230KV GEN-TIE LINE DESIGN CHARACTERISTICS

Type of Power Line Support Structure	Light-Duty Steel or Concrete Monopole Structure
Support structure height	Approximately 115 feet
Support structure width	Base approximately 30 to 36 inches
Inter-structure span length	Approximately 850 feet
Number of support structures per mile	Approximately 6
Voltage	230 kV

SOURCE: Palen Solar III, LLC, 2013 (Table 2-11)

cable under I-10 just south of the site and then westerly along the south side of I-10 to an existing microwave station. However, after the PSPP PA/FEIS was issued, SCE stated its preference for a redundant telecommunications cable instead of a microwave tower. Therefore, the PSEGS proposes to install a redundant fiber optic telecommunications cable entirely underground within an approximately 12-inch wide by up-to-12-foot deep trench located in the same ROW as the gen-tie line as shown in Figure 2-2.

Natural Gas Supply Line

Each solar plant for the PSEGS would include two natural gas-fired boilers to assist with daily start-up of the power generation equipment and to preserve energy in the steam cycle overnight. These auxiliary boilers would require a natural gas fuel supply, which would be provided by SoCal Gas. SoCal Gas would construct, own, and operate the new natural gas line, which would be the subject of an SF 299 ROW application to be filed separately by SoCal Gas (Palen Solar III, LLC, 2013). The BLM is analyzing the potential effects of the natural gas supply line construction and operation as a connected action in this Draft SEIS.

SoCal Gas would upgrade and extend an existing distribution line from its main transmission gas pipeline, which is located approximately 1.8 miles west and south of the PSEGS site. Existing distribution facilities would be upgraded from a 4-inch diameter natural gas pipeline to an 8-inch diameter pipeline, and SoCal Gas would permit and construct a new 8-inch natural gas pipeline extension from the current retail meter point to the new PSEGS meter, which would be located on-site within the proposed common area. The natural gas pipeline extension would travel from the new PSEGS natural gas metering station in a southerly direction under I-10 for a total distance of approximately 2,960 feet. A tap station on SoCal Gas's main transmission natural gas pipeline would be installed at this point with a new gas metering station to measure and record gas volumes from the metering station (see Figure 2-2).

The natural gas pipeline would be buried approximately 3 to 5 feet deep except where the line crosses the I-10 corridor. In that location, traditional jack and bore procedures would be employed in accordance with Caltrans requirements until the line exits the Caltrans right-of-way, where its depth may be as deep as 12 feet. The natural gas pipeline would be constructed within a 50-foot wide ROW and disturb an estimated total area of 4 acres outside of the PSEGS boundary. This disturbance estimate includes approximately 2.7 acres on BLM land and 1 acre within the

Caltrans ROW. Within the latter ROW, an approximately 100 feet by 100 feet jack and boring set and receiving stations would be constructed on each side of I-10.

Water Supply and Use

Water for use for the PSEGS would be sourced primarily from onsite groundwater wells. The PSEGS groundwater wells would supply both solar plants and the common area. Additional water for use in association with the gen-tie line construction may be obtained from municipal or other sources. The PSEGS water uses include boiler make-up water, mirror wash water, and domestic water, as well as water used during construction for concrete mixing, dust abatement, and soil compaction. The PSEGS would install up to a total of 10 wells, which would be located near the power blocks, common facilities area, and concrete batch plant. The project would require an average of 400 AFY during construction (for a total of 1,130 acre feet during the construction period) and an average of 201 AFY during operation. The proposed primary water treatment systems would include the following components: manganese dioxide iron removal filter, cartridge filters, reverse osmosis, and electrodeionization.

Each of the two power blocks would have four tanks, including the following:

1. One 800,000 gallon capacity raw water/fire water storage tank measuring 60-feet in diameter and 46-feet high. A portion of the raw water -- approximately 200,000 gallons -- would be for plant use (e.g., boiler feedwater, providing supplemental cooling for plant auxiliary systems, and mirror washing) while the remainder would be reserved for fire water service;
2. One 95,000 gallon capacity demineralized water storage tank for storing steam-cycle makeup water measuring 26 feet in diameter and 26-feet high;
3. One 75,000 gallon capacity waste water storage tank measuring 25 feet in diameter and 23-feet high;
4. One 70,000 gallon capacity mirror wash water storage tank measuring 25 feet in diameter and 21-feet high; and
5. The common area would contain a combined service water/firewater tank with an approximately 480,000 gallon capacity that measures 52-feet in diameter and 36-feet high.

All tanks would be constructed from shop-fabricated plates welded in the field. The proposed service/fire water and waste water storage tanks are epoxy coated carbon steel. The proposed demineralized water and wash water storage tanks are stainless steel. Tank foundations would be concrete with piles if required by the geotechnical report.

Fencing and Security

Prior to commencement of PSEGS construction, a chain link security fence would be erected around the perimeter of the site or the affected work area, the switchyard, and other areas requiring controlled access. Perimeter fencing would be designed and installed in accordance with requirements of Department of Homeland Security, and is expected to be 7 feet high, constructed of galvanized posts, a top rail, 2-inch chain link fabric, and constructed directly adjacent to the desert tortoise fence. Posts would be embedded in concrete.

Swing or rolling type controlled access gates would be located at the entrances to the facility. Access through the main gate would require an electronic swipe card to prevent unaccompanied visitors from accessing the facility. All visitors would be logged in and out of the facility during normal business hours. Visitors and non-employees would be allowed entry only with approval from a staff member at the facility. Visitors would be issued visitor passes to be worn during the visit and returned at the main office when leaving.

Personnel would staff the facility 24 hours per day/seven days per week. Even when the solar power plant is not operating, personnel would be present as necessary for maintenance, to prepare the plant for startup, and/or for site security.

Lighting

The PSEGS would include lighting for normal operations and emergency egress, as well as aviation safety lighting for power tower structures, consistent with FAA and Air Force Aviation Safety requirements. The Applicant is not proposing to light the transmission towers, which would rise to a height of 120 feet. The FAA recommends two or more steady burning (L-810) lights on structures less than 150 feet that are used for transmission lines (FAA, 2007). However, BLM is not recommending transmission tower lighting in this circumstance, given its night sky considerations. Facilities and operations lighting plans would be developed in consultation with the National Park Service. In general, PSEGS would utilize motion-controlled and downcast lighting, and low-pressure lamps and fixtures that do not create glare. Outdoor roadway lighting would be photo-cell controlled. Tower lighting would be adjusted, as necessary, in response to resource agency consultations regarding avian protection measures and as approved by the FAA.

Fuel Supply and Use

The proposed natural gas distribution line described above would supply the anticipated annual maximum demand for natural gas of approximately 742,000 MMBtu (Palen Solar Holdings, LLC., 2012).

Fire Protection

The PSEGS would fall under the jurisdiction of the Indio Office of the Riverside County Fire Department. Based on the requirements of Riverside County Ordinance No. 787.1, the piping system supplying the fire hydrants would be sized to convey a potential firewater flowrate of 5,000 gpm. Minimum firewater storage volume in each power block would be 600,000 gallons. Firewater would be supplied from the combined storage tank located at each power block. One electric primary and one diesel-fueled backup firewater pump, each with a capacity of 5,000 gpm, would deliver water to the fire protection piping network. Fire protection for the solar field would not be required because no combustible materials would be present in the solar field area.

The fire protection system would be designed in accordance with all applicable laws, ordinances, regulations, and standards to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water would be the service/firewater storage tank located at each power block and the firewater storage tank in the common area. An electric jockey pump and electric-motor-driven main fire pump would be provided for each power block and the common area to maintain the water pressure in the fire main at the level required to serve all firefighting systems. In addition, a back-up 204 hp diesel-engine-driven fire pump would be provided for each power block and the common area to pressurize the fire loop if the power supply to the electric-motor-driven main fire pump fails. A fire pump controller would be provided for each fire pump.

Waste Generation and Management

PSEGS wastes would be comprised of non-hazardous wastes including solids and liquids and lesser amounts of hazardous wastes and universal wastes.

Non-Hazardous Materials

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 process wastewater streams. The latter, such as reverse osmosis (RO) system reject water, boiler blowdown, and auxiliary cooling tower blowdown generally contain levels of dissolved minerals and silica that are too high for use within the boilers. A septic tank and leach field system would be installed to manage domestic sewage. Most other waste streams would be either recycled or sent to the evaporation ponds. A preliminary analysis of the discharge stream to the evaporation ponds was provided by the Applicant and is provided in Table 2-3, below. However, some water from the recycling process, such as Evaporator System concentrate (described below), would contain detergents, soluble oil, and suspended solids. This concentrated wastewater would be transported off-site for disposal by certified solid waste treatment facility.

TABLE 2-3
MAXIMUM RESIDUE DISSOLVED CONSTITUENT CONCENTRATIONS FOR DISCHARGE TO EVAPORATION PONDS

Constituent	Concentration (mg/L)	Constituent	Concentration (mg/L)
Arsenic	0.43	Potassium	370
Barium	3	Iron	11
Chromium	0.2	Manganese	0.7
Copper	2	Fluoride	140
Molybdenum	2	Chloride	25,000
Nickel	0.4	Nitrate, as	0.15
Selenium	0.2	Sulfate	15,000
Zinc	12	Phosphate	2
Calcium	3,000	Alkalinity, as	4,200
Magnesium	640	Silica	1,200
Sodium	20,500	pH	5-7

SOURCE: Palen Solar Holdings, LLC, 2012

Wastewater Treatment

The primary wastewater collection system would collect and process wastewater from all of the solar plant equipment, including the boilers and water treatment equipment. To the extent practical, processed wastewater would be recycled and reused.

Each solar plant and the administration complex would include a septic tank and leach field system for sanitary water streams, including showers and toilet. When needed, septic tank contents would be removed from site by a sanitary service. Based on the current estimate of 2,800 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.

Plant waste water streams, as further described below, would be recycled as much as possible before being routed through a thermal evaporation system and a lime softening process. The thermal evaporator will be powered by electricity. The reject from the thermal evaporator would be stored in a storage tank before being transferred to the evaporation ponds. Recycled water would be returned to the raw water tank.

The wastewater system for both power blocks would require two 2-acre evaporation ponds located in the common area. The wastewater from the each power block would be transported to the evaporation ponds by truck. One truck trip a day from each power block is anticipated to be sufficient for this purpose.

Plant Drains and Oil/Water Separator. The primary wastewater collection system would collect process wastewater from all of the solar plant equipment, including the boilers and water treatment equipment. Plant drains would capture washdown water. This water would be routed through an oil/water separator, temporarily stored in a wastewater collection tank, and then treated by the thermal evaporator system.

SRSG, WSAC and Boiler Blowdown. Blowdown from the SRSG and natural-gas-fired boiler would contain dissolved solids and silica. The blowdown will be discharged to flash tanks. Steam from the flash tanks would be recovered back into the steam cycle. Condensate from the flash tanks would be further flashed and recycled to the raw water storage tank. As an alternative, blowdown may be discharged to the wastewater collection tank for treatment.

Thermal Evaporator System. Each plant would have an onsite Waste Water Treatment (WWT) system consisting of thermal evaporation with mechanical vapor compression to concentrate the wastes prior to final disposal to evaporation ponds. The wastewater collected in the above referenced storage tank would be pumped to a thermal evaporation unit. The thermal evaporator would convert the water component in wastewater to clean vapor leaving a small residue that contains virtually all of the dissolved solids. Distillate collected from the WWT system would be recycled and routed to the treated water storage tank for reuse. Effluent (residues) from the WWT systems would be diverted to the evaporation ponds.

The WSAC blowdown stream would pass through a lime clarifier- type water softening system designed to reduce the total dissolved solids level in the wastewater stream. The sludge generated from the lime softening pretreatment system would be dewatered onsite using either a belt filter press or centrifuge. The dewatered lime sludge cake would be collected in truck trailer bins and transported offsite to an approved disposal facility. The filtrate/centrate will be conveyed back to the influent into the lime softening pretreatment process.

Evaporation Ponds. The wastewater system for both power blocks would require two 2-acre evaporation ponds located in the common area. The wastewater from the each power block would be transported to the evaporation ponds by truck. One truck trip a day from each power block is anticipated to be sufficient for this purpose. The two 2-acre evaporation ponds would be located in the common facilities area and designed with a primary and secondary liner system and an intervening leak collection and recovery system (LCRS). The evaporation ponds would be designated as Class II Surface Impoundments Waste Management Units (WMU) and would meet the requirements of the California Code of Regulations (CCR) (27 CCR §§20200 et seq). No import or export of soil would be required to construct the two evaporation ponds. In each case, the evaporation ponds would be designed with a primary and secondary liner to prevent leaching. All ponds would be equipped with netting to prevent access by wildlife.

Hazardous Materials

The storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in storage tanks, and most other chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks, spills, and stormwater. Concrete containment pits and drain piping design would allow a full tank capacity spill without overflowing the containment. For multiple tanks located within the same containment area, the capacity of the largest single tank would determine the volume of the containment area and drain piping. Drain piping for reactive chemicals would be trapped and isolated from other drains to eliminate noxious or toxic vapors.

Safety showers and eyewash stations would be provided adjacent to, or in the vicinity of, chemical storage and use areas. Plant personnel would use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel would be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material would be stored onsite for spill cleanup. See Section 3.12 and Section 4.11 for additional details.

Construction

The construction period for the PSEGS would be approximately 34 months and is proposed to commence during the fourth quarter of 2013 and conclude with commercial operation in June 2016. The facility would be constructed in two overlapping phases. Phase 1 would include construction of the generation tie-line, access road, common facilities area, common facilities, temporary construction laydown area, both power blocks including laydown area, and a portion of solar field 2. Phase 2 would include the remainder of the facility.

Generally, construction activities would occur from 5:00 a.m. to 3:30 p.m. with a swing shift during heliostat assembly (from 6:00 p.m. to 4:00 a.m.) and during tower construction (which may occur in three shifts around the clock until these tasks are completed). Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., tower construction, foundation pouring, or working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the project, some activities would continue 24 hours per day, 7 days per week. Such activities may include but not be limited to the installation of heliostats and pouring of concrete for power towers.

PSEGS construction on average would require approximately 998 daily construction workers. During peak construction months, PSEGS staffing would increase to approximately 2,311 daily workers. Construction personnel would include boilermakers, carpenters, cement finishers, electricians, iron workers, laborers, millwrights, equipment operators, pipefitters, and others. Temporary construction parking areas would be provided within the project site adjacent to the primary construction laydown area and within each power block’s laydown area. The primary construction laydown area would be utilized throughout the build out of the two solar units.

Project construction would commence with the building of site roads and the installation of temporary construction facilities including office trailers, parking areas, material laydown areas, a concrete batch plant, and a heliostat assembly facility. The construction of each plant would begin with the excavation and placement of foundations and other underground facilities. Superstructures and equipment then would be placed on the foundations. Once the mechanical equipment is in place, construction would continue with the installation of the piping, electrical equipment, and cables necessary to connect and power the equipment. Upon completion of construction, the checkout, testing, startup and commissioning of the various plant systems would begin, resulting in a fully operational solar plant.

During Project construction, the majority of the construction workforce is anticipated to be sourced locally and from the surrounding communities near the Project. Certain non-local specialty trade workers supporting proprietary plant equipment/components and construction processes also may be employed on a short-term basis during construction. Construction access would be from the primary access road via the I-10/Corn Springs Road interchange. Materials and equipment would be delivered by truck.

Site Preparation

Initial site preparation activities would include constructing exclusionary fencing, internal site roadways; trimming vegetation in the heliostat fields; and installing drainage systems, underground utilities and conduits. Moderate site preparation would be required prior to construction of the array fields, power blocks, control building foundations, support structures, and other project features. The subgrade preparation would include limited areas where the complete removal of all vegetation and topsoil would be done.

Grading and Erosion Control

Heavy to medium grading would be performed within each plant's solar power tower and power block areas, for the switchyard, within the administration complex area, and for the construction laydown area. The deepest excavations would be restricted to foundations and sumps. Within each of these individual areas, earthwork cuts and fills would be balanced to the degree possible. The cuts and fills for the site would be balanced such that there would be no need for importing or exporting of fill materials. At some washes, limited grading could be required to allow the heliostat installation equipment and mirror washing machines access to the solar fields. Surface rocks and boulders would be relocated to allow proper installation of heliostats and facilities if they cannot be avoided.

Grading would be performed immediately prior to commensurate construction activities. To minimize wind and water erosion, open spaces would be preserved and left undisturbed maintaining existing vegetation to the extent possible with respect to site topography and access requirements. Areas compacted during construction activities would be restored, as appropriate, to approximate preconstruction compaction levels to minimize the opportunity for any increase in surface runoff and sediment movement.

If needed, stone filters and check dams would be placed strategically throughout the site to provide areas for sediment deposition and to promote the sheet flow of stormwater prior to leaving the site boundary. Where available, native materials (rock and gravel) would be used for the construction of the stone filter and check dams. Diversion berms would be used to redirect stormwater around critical facilities, as required. As necessary, the PSEGS stormwater management system would include diversion channels, bypass channels, or swales to direct run-on flow from up-slope areas and run-off flow through and around each facility. Diversion channels would be designed so that a minimum ground surface slope of 0.5 percent would be provided to allow positive, puddle-free drainage. To reduce erosion, storm drainage channels could be lined with a nonerodible material such as compacted rip-rap, geo-synthetic matting, or engineered vegetation. The design would be developed for sheet flow for all storm events less than or equal to a 100-year, 24-hour storm event.

Trenching and Excavation

During construction, trenches would be excavated using backhoe and trackhoe construction equipment for the installation of underground systems, equipment and materials including the following: on-site electrical transmission system conductors and on-site natural gas system. While the typical trench would be 2-3 feet wide at the base and 3-6 feet deep, a few trenches may have widths and/or depths up to 12 feet. Areas in which two electrical conductors (one from each solar plant) are proposed to be routed in parallel to the switchyard may require trenches that are slightly wider and/or of greater depth. In addition, buried conductors also would require manholes and underground vaults for cable pulling during construction approximately every 2000 feet. The manholes would be approximately 8-10 feet in depth.

Heliostat Field Preparation

Vegetation clearing, grubbing, and contour smoothing in the heliostat fields would occur where necessary to allow for equipment access and stormwater management. In areas where these activities are not required for access or construction, the vegetation would not be removed but would be mowed (if needed) to a height of approximately 12 to 18 inches.

A linear swath of vegetation along the outer edge of each heliostat field would be cleared, grubbed and smoothed to create a 12-foot wide external perimeter path for installation and maintenance of the tortoise and security fence and associated external perimeter inspection roads. Grading of the roads would be performed in limited areas to afford safe passage of vehicles. Elsewhere, vegetation would be cut (when necessary) to a height that would allow clearance for heliostat function while leaving the root structures intact. Occasional cutting of the vegetation would be performed as needed to permit unobstructed heliostat mirror movement.

Installation of Heliostats

The heliostats would be installed in two steps. Initially, the support pylons would be installed using vibratory technology to insert the pylons into the ground (pre-augering prior to the installation of the pylon may be required). Depths are not expected to be greater than 12 feet. Then, the heliostat assembly (mirrors, support structure and aiming system) would be mounted on the pylon. The majority of the site would maintain the original grades and natural drainage features and, therefore, construction will require machines that are maneuverable and can negotiate the terrain. Pylons would be delivered to their locations by an all-terrain vehicle. Installation of the heliostat assemblies would be accomplished with a rough terrain crane. The crane would be able to mount heliostat assemblies on several pylons before moving to the next location.

The heliostats located in closest proximity to the tower would be densely packed to maximize collection of solar energy. In the larger heliostat array outside of this zone, the solar field would include drive zones. The drive zones would be used for installation of the heliostats and then subsequent washing of the mirrors. The drive zones would be located approximately every 140-170 feet in a circumferential fashion surrounding the power blocks. The drive zones would be approximately 10 feet wide and will be cleared, grubbed, smoothed, and rolled to permit safe and efficient installation of the heliostats and washing of the mirrors. The shoulders of washes crossed by the drive zones would be graded as necessary to permit safe passage of vehicles for installation and maintenance activities, while preventing alteration of flow patterns across the ungraded portion of the Project site.

Construction of Power Blocks

The construction of each power block would begin with the excavation and placement of foundations and other underground facilities. Superstructures and equipment then would be placed on the foundations using cranes. Major items include the 750-foot-tall solar power tower and SRSG construction, the STG pedestal and STG, and construction of the air-cooled condenser. Towers would be sited outside of the potential fall distance relative to the I-10 corridor and outside of other public travel ways.

Construction Vehicles

Vehicles used during PSEGS construction would be similar to those typically used during large scale industrial developments. Construction vehicles would consist almost entirely of diesel powered, heavy-duty, off-road equipment. Examples include: graders, excavators, bulldozers, cranes, compactors, elevating scrapers, front end loaders, forklifts, and concrete transit mix trucks, among others. Several light-duty, gasoline-fueled pick-up trucks and gators would also be used during construction. A more detailed description of the types, quantities, and frequencies of use for these vehicles is provided in Table 4.1E-5 of Attachment D.

Generation Tie-Line and Telecommunication Cable

Construction of the gen-tie line would include staging/pulling areas. The staging/ pulling areas would be located within the ROW corridor and could be fenced for security. Access to the ROW and transmission structure sites would be required during construction and for the long term maintenance of the gen-tie line. To limit the amount of disturbance associated with access, the existing road serving the adjacent existing transmission line would be used to the greatest extent possible. Short spur roads from the existing road would be constructed to access each transmission structure location.

New access spur roads would be constructed using a bulldozer or grader (if required for safe access to a construction location), and a roller to compact and smooth the ground. Front-end loaders could be used to move soil locally or offsite. Typical 14-foot-wide straight road sections and 16- to 20-foot-wide sections at curves would be required to facilitate the safe movement of equipment and vehicles.

The redundant communication cable would be plowed-in or trenched utilizing standard cable installation machinery, or constructed using conventional trenching equipment, if installed underground. The cable would be installed in the existing transmission line access roadway. If conventional trenching techniques are used for construction, then the trench would be covered at the end of each shift to avoid wildlife access.

A temporary workspace would be used at the 230kV structure sites on BLM lands and may be cleared and graded. Temporary disturbance areas include staging/pulling areas and temporary construction areas and would be minimized to the maximum feasible extent. Because of the generally flat topography along the proposed facility route construction pad grading at transmission structure locations may not be required at all locations. Temporary graded areas would be recontoured to match the original grade after construction.

Vegetation clearing and ground disturbance would be required at each structure site to excavate tower holes and pour concrete foundations. Temporary ground disturbance would occur at each structure location. Vegetation in each temporary disturbance would not be cleared apart from the locations directly required to install the structure and structural foundations.

Foundation excavations would be made using mechanized equipment, with the poles requiring one 6 to 12 foot diameter hole. Structure foundations would be excavated with a vehicle-mounted power auger or backhoe. In rocky areas, the foundation holes would be excavated by drilling. Foundation holes would be covered or fenced if practical. Foundations would be installed by placing reinforced steel and transmission structure steel components into each foundation hole, positioning the steel components, and encasing them in concrete. Excess spoil material would be used for fill where suitable. The foundation excavation and installation activities would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix concrete trucks.

Water would be used for soil compaction and dust abatement at each structure site and along access roads. Water for footer compaction and dust abatement will be obtained from municipal or other water sources and trucked to each construction location.

When solid rock is encountered, blasting, rock-hauling, or the use of a rock anchoring or micro pile system for transmission tower facilities would be implemented subject to approval from the BLM and other applicable federal, state, or local agencies.

Steel structure sections would be delivered to structure locations where they would be fastened together to form a complete structure and hoisted into place by crane. At each structure site, leveled areas approximately 30 by 40 feet would be created to safely operate construction cranes and larger equipment. A work area also would be required for the structure footing location, structure assembly, and the crane maneuvers. The work area would be cleared of vegetation only to the extent necessary. Concrete for use in constructing foundations would be dispensed from concrete mixer trucks. After construction, all pads would be restored to natural contours and revegetated where required.

After the structures are erected, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Pilot lines would be pulled (strung) from structure to structure and threaded through the stringing sheaves at each structure. Following the pilot lines, a larger diameter, stronger line would be attached to conductors to pull them onto the structures. This process would be repeated until the ground wires or conductors are pulled through all sheaves. The shield wire and conductors would be strung using powered pulling equipment at one end and powered braking or equipment tensioning at the other end of each conductor stringing segment. Sites for tensioning equipment and pulling equipment would be approximately two miles apart. This distance may be increased in certain locations by pulling in two sets of conductors back-to-back. Each tensioning site would be approximately 100 feet wide by 400-600-feet long. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be necessary at each tensioning site.

Construction Water

Construction water would be sourced primarily from onsite groundwater wells. Additional water for use in association with the gen-tie line construction may be obtained from municipal or other sources. PSEGS construction-related water requirements are estimated to be 400 AFY, or approximately 1,130 acre-feet for the 34-month construction period. Construction water would be used for dust control on roads and construction areas, soil compaction, stockpile sites, building pads, hydrostatic testing for tanks and pipelines, and for concrete pours onsite (CEC, 2013).

Concrete Batch Plants

A concrete batch plant would be located within the proposed construction logistics area. The PSEGS would require an estimated volume of 30,000 cubic yards of concrete for foundations and associated structures in the power blocks, excluding the towers and foundations. The preliminary concrete estimate for both towers and their foundations is 81,000 cubic yards (Galati, 2013). Concrete-related water requirements are included in the maximum construction water construction estimate of approximately 400 AFY. Unmixed cement would be purchased from commercial suppliers and stored in a designated area adjacent to the mobile batch plant. Aggregate required for concrete manufacturing would be obtained from commercial suppliers and transported to the site. Concrete generated at this facility would be transported to the placement area by concrete mixer trucks.

Fuel Depot

A fuel depot would be constructed to refuel, maintain, and wash construction vehicles, and would occupy an area of approximately 75 feet by 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.

Construction Power

Construction power would be provided to the site by one or a combination of three ways. The PSPP proposed to obtain all of its construction power from SCE via two alternative sources of construction power. 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 ROW from Rice Road to the project site. The second alternative would be a new 12.47 kV line built within the surveyed 230 kV transmission line ROW from Rice Road to the project site. This line would be built as a combination of new 12.47 kV line or hung on the new 230 kV transmission line towers that connects the single circuit 230 kV line to the project site. The project would include construction of a 12.47 kV internal distribution system and step down transformers to provide power as needed to construction operations. The PSPP PA/FEIS thoroughly evaluated these options.

Alternatively, construction power could be provided through the early construction of the PSEGS gen-tie line and power backfed to the site switchyard. In this case, the gen-tie line would be completed prior to major construction power demands at the site. For purpose of the environmental analysis all options are being analyzed to allow the Applicant to use all or any combination of these three options.

Construction Wastewater

Sanitary wastes produced during construction would be held in chemical toilets and transported offsite 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.

2.1.5 Operation and Maintenance

Management, engineering, administrative staff, skilled workers, and operators would serve both solar plants. The PSEGS is expected to employ up to 100 full-time employees: 30 at Solar Plant 1 (including mirror washing machine operators), 30 at Solar Plant 2 (including mirror washing machine operators), and 40 at the administration complex. The facility would operate 7 days a week. To maintain heliostat performance, heliostat washing is projected to occur up to 24 hours per day, covering the entire solar field weekly.

A plant operation and maintenance program, typical of a project this size, would be implemented to control the quality of operations and maintenance. Operations and maintenance procedures would be consistent with industry standards practices to maintain useful life of plant components. A specific program for the PSEGS would be defined and implemented during initial plant startup. Detailed long-term maintenance schedules would be developed and include periodic maintenance and overhauls in accordance with manufacturer recommendations.

Operation Water Use

Primary operational water uses consist of replacing boiler blowdown, providing supplemental cooling for plant auxiliary systems, and water for washing the heliostats to ensure they function at full performance. Regular mirror washing is anticipated to be needed once a week to facilitate dust and contaminant removal using water from the demineralization (Reverse Osmosis) process. Mirror washing would occur during the day and night and involve a mirror washing machine that utilizes water, air, and brushing. Wash water that falls from the mirrors to the ground is expected to soak in with no appreciable runoff due to the small volume. Remaining rinse water from the mirror washing operation is expected to evaporate on the mirror surface. The treated water production facilities would be sized to accommodate the solar mirror washing demand, which would be 71 AFY for PSEGS.

Table 2-4 summarizes PSEGS operational water use at full load. Minimal amounts of water are expected to be required for dust control after construction is complete.

TABLE 2-4
TOTAL AVERAGE DAILY OPERATIONAL WATER REQUIREMENTS FOR SOLAR PLANTS 1 AND 2, COMBINED

Use	Average Daily Use		Annual Average Use
	Gpm	Gpd	AFY
Process Uses	63	90,873	102
Mirror Washing	44	63,408	71
Potable Water	2.1	2,995	3.4
Dust Suppression	15	21,802	24.4
Total	124	179,078	201

NOTES:
gpd = gallons per day
gpm = gallons per minute
AFY = acre-feet per year
Average Daily Use is based on annual operating hours of 3,500 hours/year

SOURCE: Palen Solar III, LLC, 2013 (Table 2-16)

2.1.6 Closure, Decommissioning and Reclamation

Temporary Closure

For a temporary facility closure, where there is no release of hazardous materials, security of the facilities would be maintained on a 24-hour basis. The BLM and other responsible agencies would be notified as necessary and appropriate. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations would be implemented. The contingency plan would be conducted to ensure conformance with all applicable requirements and the protection of public health, safety, and the environment. The plan, depending on the expected duration of the shutdown, could include the draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. All wastes would be disposed of according to applicable requirements.

Where the temporary closure includes damage to the facility, and there is a release or threatened release of regulated substances or other hazardous materials into the environment, procedures would be followed as set forth in the Risk Management Plan and Hazardous Materials Business Plan. Procedures would include methods to control releases, notification of applicable authorities and the public, emergency response, and training for plant personnel in responding to and controlling releases of hazardous materials. Once the immediate problem is solved, and the regulated substance/ hazardous material release is contained and cleaned up, temporary closure would proceed as described above for a closure where there is no release of hazardous materials.[2]

2 Palen Solar Holdings, LLC, 2012.

Permanent Closure

The PSEGS would be required to prepare a Decommissioning and Reclamation Plan to ensure compliance with applicable laws, and to ensure public health and safety and protection of the environment. The Decommissioning and Reclamation Plan would include a cost estimate for implementing the proposed decommissioning and reclamation activities and be submitted to the BLM, USFWS, CDFW, and CEC for review and approval prior to a planned closure.

Decommissioning and Reclamation

It is assumed that decommissioning and reclamation of the permanent plant facilities would begin 30-50 years after the commercial operation date of the solar plant. Decommissioning of temporary facilities, including, but not limited to, temporary septic systems, temporary underground conduit, temporary power poles, temporary concrete pads, and similar items would be completed during the plant commissioning timeframe or within the first 6 months of facility operation following completion.

Site decommissioning and reclamation activities would include, among other activities the following:

1. Removal of above ground structures unless converted to other uses;
2. Re-contouring of lines and grades in the disturbed area of the site to match the natural gradients and functions of the site;
3. Re-establishment of native vegetation in the disturbed areas;
4. Removal of all residual materials and chemicals from the site prior to demolition for reuse at other facilities or for proper disposal at licensed facilities;
5. Demolition of the above-ground structures (dismantling and removal of improvements and materials) in a phased approach while still using some items until close to the end of the project. For instance, the water supply, administrative building and some electrical power components would be modified to be used until very late in the decommissioning project;
6. Demolition and removal of below-ground facilities (e.g., floor slabs, footings, and underground utilities) as needed to meet the decommissioning goals;
7. Soils cleanup, if needed, with special attention to hazardous materials use/storage areas to ensure that clean closure is achieved; and
8. Disposal of materials in appropriate facilities for treatment/ disposal or recycling.

Although various types of decommissioning and demolition equipment would be utilized to dismantle each type of structure or equipment, dismantling would proceed according to the following general staging process. The first stage would consist of dismantling and demolition of above-ground structures to be removed. The second stage would consist of concrete removal as needed to ensure that no concrete structure remains within 3 feet of final grade (i.e., floor slabs, below-ground walls, and footings) as appropriate. The third stage would consist of removal/ dismantling of underground utilities within 3 feet of final grade. The fourth stage would include excavation and removal of soils, and final site contouring to return the originally disturbed area of the site to near original conditions while disturbing as little of the other site areas as is practical.

Above-ground demolition would entail breakdown and removal of above-ground structures and facilities. Residual materials from these activities would be transported via heavy haul dump truck to a central recycling/ staging area where the debris would be processed for transport to an offsite recycler. A project recycle center (either at each power unit as the work progresses or at the central admin area) would be established to:

1. Size reduce and stage metals and mirrors for transport to an offsite recycler:
2. Crush concrete and remove rebar;
3. Stockpile concrete for later use at the site;
4. Stage rebar for transport to an offsite recycler; and
5. Temporarily store and act as a shipping point for any hazardous materials to an approved treatment, storage, and disposal facility.

The proposed strategy for demolition consists of use of mechanized equipment and trained personnel in the safe dismantling and removal of the following above-ground structures:

1. Heliostats and related equipment: using low environmental impact equipment;
2. Towers: using explosives to put the towers on the ground, then conventional heavy equipment to size reduce and transport for recycling (this is the industry standard for safe demolition of large towers and massive concrete structures);
3. Turbine generators, condensers and related equipment, transmission lines and towers, and above ground pipelines: using conventional demolition equipment and techniques; and
4. Near the very end of the PSEGS, the removal of site related fencing.

Unless otherwise approved by BLM at the time of decommissioning, all PSEGS facilities would be removed. It is anticipated that any and all site related concrete slabs and footings; piping and utilities, including water lines; below ground electric/ control/ communication lines, and gas lines would be completely removed, regardless of the depth below final grade. These materials would be excavated and transported to the recycling area(s) for processing and ultimate recycling. The resulting trenches would be backfilled with suitable material of similar consistency and permeability as the surrounding native materials and compacted to 85 percent relative compaction.

The need for, depth, and extent of contaminated soil excavation would be based on observation of conditions and analysis of soil samples after removal of the evaporation pond and hazardous materials storage areas, and upon closure of the recycling center(s) and waste storage areas used during decommissioning. At this time, removal of contaminated soil is assumed not to be needed. When required, removal would be conducted to the extent feasible and as required to meet regulatory cleanup criteria for the protection of groundwater and the environment. When contaminated soil removal is required, the resulting excavations would be backfilled with native soil of similar permeability and consistency as the surrounding materials and compacted to 85 percent relative compaction.

Re-contouring of the site would be conducted using standard grading equipment to return the land to match within reason the previously existing surface and surrounding grade and function. Grading activities would be limited to previously disturbed areas that require re-contouring. Efforts would be made to disturb as little of the natural drainage and vegetation as possible. Concrete rubble, crushed to approximately 2-inch minus size, would be placed in the lower portions of fills, at depths at least 3 feet below final grade. Fills would be compacted to approximately 85 percent relative compaction by wheel or track rolling to avoid over-compaction of the soils. To the extent feasible, efforts would be made to place a layer of coarser native materials at the ground surface to add stability.

After re-contouring, the site would be revegetated using native plants where appropriate. This would be conducted with a native seed collection company. The Applicant would develop, and submit for approval by the BLM, a Site Restoration Plan. This plan would outline the protocol for the re-vegetation of the portions of the project area that are classified as temporarily impacted. The plan also would define success criteria in accordance with agency guidance and outline mitigation measures to be implemented when the success criteria are not met.

2.1.7 Applicant Proposed Measures

The Applicant has proposed the measures provided in Appendix C (Applicant Proposed Measures, or APMs) to reduce or avoid potential impacts that could result from the PSEGS. These APMs would be implemented like other elements of the PSEGS. The analysis of impacts of the PSEGS in the Draft SEIS assumes that the APMs would be implemented.

2.2 Alternatives

2.2.1 Alternatives Considered in PSPP PA/FEIS

The BLM analyzed the following alternatives as part of the PSPP PA/FEIS: Reconfigured Alternative 1, Reconfigured Alternative 2 (Options 1 and 2), and a Reduced Acreage Alternative. Three “no project” alternatives also were evaluated, including: No Action Alternative A, CDCA Plan Amendment/ No Project Alternative B, and CDCA Plan Amendment/ No Project Alternative C. Within this range, the BLM is carrying forward the Agency Preferred Alternative identified in the PSPP PA/FEIS (i.e., Reconfigured Alternative 2 (Options 1 and 2)) and No Action Alternative A. As part of the PSPP PA/FEIS, the BLM declared Reconfigured Alternative 2 Options 1 and 2 as the Agency Preferred Alternative because it is the alternative that would best fulfill the BLM’s statutory mission and responsibilities under FLPMA, BLM ROW regulations, and the other applicable Federal laws and policies giving consideration to the economic, environmental, technical and other factors analyzed in PSPP PA/FEIS Chapter 4, Environmental Consequences. Consideration of a No Action Alternative is required.

The remaining alternatives considered in the PSPP PA/FEIS are not being carried forward for consideration in a Final EIS for the PSEGS. For example, in light of changed circumstances since the issuance of the PSPP PA/FEIS (such as the CDCA Plan Amendments resulting from the Solar PEIS ROD that prioritize solar development within the Riverside East Solar Energy Zone, which includes the requested PSEGS ROW area and would govern this land if the PSEGS ROW grant were denied) it no longer makes sense to consider CDCA Plan Amendment/ No Project Alternative B or CDCA Plan Amendment/ No Project Alternative C. Also, for all of the reasons that the BLM determined Reconfigured Alternative 2 (Options 1 and 2) to be the Agency Preferred Alternative in the PSPP PA/FEIS, the other action alternatives described and analyzed in the PSPP PA/FEIS have been set aside for purposes of the PSEGS.

2.2.2 Alternatives Carried Forward in the Draft SEIS

Reconfigured Alternative 2 Options 1 and 2

Reconfigured Alternative 2 (Options 1 and 2) would be a solar thermal trough project (unlike the PSEGS, which would use solar thermal power tower technology) and have a nominal output of 500 MW. It would consist of two independent 250 MW power plants (Units 1 and 2). The components of Reconfigured Alternative 2 Options 1 and 2 are described in PSPP PA/FEIS Section 2.4.1 (p. 2-22 et seq.). Reconfigured Alternative 2 includes two possible layouts referred to as Option 1 and Option 2. A key difference between Option 1 and Option 2 is that Option 1 would include the use of 240 acres of private land near the southeast corner of the proposed site; by contrast, Option 2 would not use this privately-owned property and instead would rely (like the PSEGS) primarily on BLM-administered lands. Option 1 would disturb approximately 4,366 acres within the ROW; by comparison, Option 2 would disturb approximately 4,330 acres. Reconfigured Alternative 2 Options 1 and 2 would include a CDCA Plan amendment as described in Section 1.2 of this Draft SEIS.

No Action Alternative A

Under No Action Alternative A, ROW application CACA-48810 would be denied, and the ROW grant would not be authorized. The CDCA Plan would not be amended. Since this application area is located within the Riverside East Solar Energy Zone, the Solar PEIS Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the Solar Energy Zone.

2.2.3 Agency Preferred Alternative

The selection of the Agency Preferred Alternative involves difficult judgments, requiring one environmental value to be balanced against another. In Section 2.4.2 of the PSPP PA/FEIS (p. 2-26), the BLM determined that Reconfigured Alternative 2 was the Agency Preferred Alternative among the alternatives considered in the PSPP PA/FEIS because it would have best fulfill the BLM's statutory mission and responsibilities under FLPMA, BLM ROW regulations, and the other applicable Federal laws and policies giving consideration to the economic, environmental, technical and other factors analyzed in the PSPP PA/FEIS. In light of the changed circumstances that have occurred since the PSPP PA/FEIS was issued, as described and analyzed in this Draft SEIS for the PSEGS, the BLM preliminarily has determined that the PSEGS now is the Agency Preferred Alternative because it would better fulfill the BLM's statutory mission and responsibilities than Reconfigured Alternative 2.

2.2.4 Alternatives Considered but Eliminated From Detailed Analysis

Alternatives Considered but Eliminated from Detailed Analysis in the PSPP PA/FEIS

In the PSPP PA/FEIS, the BLM rejected five alternative sites because they would not avoid or substantially reduce the adverse impacts of the PSPP or because they would not meet PSPP objectives, the BLM's purpose and need for the project, or otherwise were not reasonable alternatives (see PSPP PA/FEIS Section 2.4.3, p. 2-27 et seq.). The same rationale applies to eliminate these potential alternatives from consideration relative to the PSEGS. The rejected alternative sites included:

1. North of Desert Center Alternative
2. Cibola Alternative
3. Palen Pass Alternative
4. Desert Center Alternative
5. Palo Verde Mesa Alternative

The PSPP PA/FEIS also screened and rejected five alternative technologies from detailed analysis, including:

1. Stirling Dish Technology
2. Solar Power Tower Technology
3. Linear Fresnel Technology
4. Utility scale Solar Photovoltaic (PV) Technology
5. Distributed Solar Technology

Specifically with respect to solar power tower technology, the PSPP PA/FEIS concluded that the environmental impacts would not be substantially lower than those associated with the solar parabolic trough technology then under consideration. While grading requirements for power tower technology were noted as being less than that for parabolic trough, the PSPP PA/FEIS cites the potential for greater impacts of solar tower technology than rough technology on Desert Center Airport. For these reasons, a solar power tower technology alternative was not carried forward for detailed analysis in the PSPP PA/FEIS.

Additional Alternatives Considered but Eliminated from Detailed Analysis

As described in Section 1.3 of this Draft SEIS, the PSEGS's objectives are to deliver 500 MW of renewable electrical energy to the regional electrical grid to fulfill the existing approved Power Purchase Agreements (PPAs) for electrical sales from the facility.[3] The PSEGS has two PPAs that consequently will require two sets of generation facilities. The proposed site also has an approved LGIA for 500 MWs to interconnect at the Red Bluff Substation, which is currently under construction. Because FERC approved "abandoned plant treatment" for the PSPP, successful construction of a 500 MW project will allow the ratepayers to recoup their transmission infrastructure investment related to the PSPP.

While PSIII has determined that the proposed site is well positioned and suited for the generation of clean, renewable, competitively priced solar-generated electricity in accordance with the stated PSEGS objectives, PSIII's initial project design and optimization process for the site contemplated a number of alternatives including:

1. Alternative Tower Heights
2. Alternative Number of Towers

These potential alternatives were determined not to warrant further analysis, however, due to their inability to comply with PSIII's identified Project objectives, which are described in Section 1.4 of this Draft SEIS and summarized above.

Alternative Tower Heights

The amount of electricity that can be produced by the PSEGS correlates directly to the amount of reflective surface area of the heliostats. The relationship can be summarized as follows: "As the height of the tower increases, the reflective surface of any given heliostat is increased." Thus, as the height of the tower increases, the efficiency of the solar field also increases.

Two significant factors that affect heliostat field efficiency are the effects of blocking and shading. Blocking occurs when a heliostat in front of another blocks the reflected solar energy on its way to the tower. Thus, as the height of the tower increases, it is possible to bunch more heliostats closer to the tower thus maximizing the efficiency of the solar field. Shading is likely to

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[3] In accordance with BLM Instruction Memorandum 2011-059 (February 7, 2011), the purpose and need statement as a whole describes the problem or opportunity to which the BLM is responding and what the BLM hopes to accomplish by the action. The purpose and need statement in a NEPA document for a renewable energy ROW application must describe the BLM's purpose and need for action, not the applicant's interests and objectives (BLM NEPA Handbook Section 6.2). Nonetheless, the applicant's interests and objectives, including any constraints or flexibility with respect to its proposal, help to inform the BLM's decision and cannot be ignored in the NEPA process. The applicant's interest and objectives should be described in the NEPA document (e.g., in the project description). This information will help determine which alternatives are analyzed in detail through the NEPA process and also may provide a basis for eliminating some alternatives from detailed analysis. The BLM may eliminate an alternative from detailed analysis for a variety of reasons, including, for example, if the alternative does not respond to the BLM's purpose and need, if the alternative is not technically or economically feasible (as informed by the applicant's interests and objectives), or if the alternative is inconsistent with the existing management prescriptions for the area as set forth in the governing land use plan.

occur at low sun angles when a heliostat casts its shadow on another heliostat behind it. Thus, the higher the tower, the later in the day the project can operate thus maximizing output over a calendar year.

The negative effects of both blocking and shading are reduced when the heliostats can be aimed at a taller tower thus leading to a direct improvement in overall project efficiency and cost-effectiveness. The inverse relationship also holds true: any alternative contemplating a shorter tower height also contemplates a less efficient solar field and, thus, a project with output inconsistent with the stated PSEGS objectives. The PSEGS, as proposed, would minimize land consumption on a megawatt-hour (MWH) per acre basis. A taller tower would have fewer impacts on environmental resources by virtue of the fact that it requires less land to generate the same MWs. At the same time, despite the potential loss of efficiency, a shorter tower would have a smaller viewshed, contrast less with its surroundings, and ultimately impact a smaller number of sensitive receptors.

Alternative Number of Towers

Though it is logical to believe that a single, higher tower may be a viable alternative, there are two variables that provide a counterbalance to tower height and thus limit the ability to execute on a single tower layout: distance of the heliostat from the boiler, and structural constraints of the tower. Both variables effectively limit the ability for a single tower to be a viable alternative to a two tower layout.

The efficiency of a heliostat to direct solar energy onto the boiler decreases with its distance from the tower due to the effects of atmospheric attenuation and spillage. Atmospheric attenuation describes how the constituents in the atmosphere (such as water vapor) reduce the amount of reflected energy between the heliostat field and receiver. The negative effects of atmospheric attenuation increase with increasing distance between the heliostat and boiler. Spillage describes the potential loss of reflected energy as the beam of reflected light from the heliostat diverges over a distance (as with a flashlight beam). With greater distance from the tower, there is an increase in the potential for some of the reflected light to diverge and “miss” the receiver.

The combined effects of these two relationships limit the efficiency of heliostats furthest from the tower. Thus, any single tower system, regardless of the tower height is limited in its maximum output capacity.

A single tower alternative that also satisfies an output capacity of 500 MWs[4] would require two major changes that would exceed the structural limitations of conventional construction

[4] Section 2.2.1 of the Revised POD states the Applicant’s purpose and need for the PSEGS as follows: “The primary purpose of the PSEGs is to deliver 500 MW of renewable electrical energy to the regional electrical grid in accordance with the existing approved Power Purchase Agreements for electrical sales from the facility.” Accordingly, although the BLM regularly considers projects that would generate less output capacity than requested in ROW grant applications, to do so here would have the same environmental consequences as No Project Alternative A because a project approved with less than 500 MW capacity would not fulfill the Applicant’s contractual obligations.

methodologies. Essentially, a doubling of the size of the boiler would exceed the “lifting” limitations of high angle cranes. Though alternative specialized construction methodologies could be employed to overcome this limitation, they are exceedingly expensive and can be quite difficult to procure within a limited timeframe.

A single tower design is not a viable alternative due to the negative impact of attenuation and spillage combined with the structural limitations of increasing boiler capacity due to lifting constraints. The economics and engineering for a single 500 MW tower would be prohibitive. Depending on the height being proposed as an alternative, it furthermore might not reduce visual impacts in most settings, as many viewpoints would be impacted by both towers. The construction of two towers would also allow the Applicant to fulfill the two existing PPAs (i.e., construct two sets of generation facilities).

CHAPTER 3
Affected Environment

3.1 Introduction

This chapter describes the affected environment for evaluating the PSEGS and other alternatives described in Chapter 2. The "affected environment" consists of the environmental and other conditions in the area that could be affected by the alternatives described in Chapter 2. Chapter 3 of the PSPP PA/FEIS describes the affected environment for the PSPP and alternatives considered in that document. Much of that discussion remains relevant to the PSEGS because: (1) the PSEGS utilizes the same primary site and therefore could impact substantially the same range of resources and resource uses; and (2) environmental conditions have not changed since publication of the PSPP PA/FEIS for many of the resources and resource uses that could be affected. As such, much of Chapter 3 of the PSPP PA/FEIS does not require supplementation or revision in this Draft SEIS. However, some elements of the PSEGS differ from elements considered in the PSPP PA/FEIS and some environmental conditions have changed since the PSPP PA/FEIS was published. Accordingly, this chapter includes, with respect to the PSPP PA/FEIS, the following: (1) verification of the environmental and other conditions that have not changed; (2) revisions to discussions of conditions that have changed; and (3) descriptions of resources and resource uses not identified in the PSPP PA/FEIS that could be affected by the PSEGS, such as those in the vicinity of the proposed gen-tie line reroute and the natural gas line.

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3.2 Air Resources

Section 3.2 of the PSPP PA/FEIS describes air quality conditions for criteria pollutants and the federal and state ambient air quality standards. For purposes of air quality analysis, the PSEGS study area would generally be the same as that evaluated in the PSPP PA/FEIS, as would be the topographic, climatic, and regulatory influences on air resources. As such, much of that discussion is relevant to the PSEGS. The following sections describe changes to standards that have occurred since publication of the PSPP PA/FEIS and present the most current representative ambient pollutant concentrations for the project area. A discussion regarding global climate change and greenhouse gas emissions can be found in Section 3.3, *Global Climate Change*.

3.2.1 Ambient Air Quality

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of criteria air pollutants for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead, called Ambient Air Quality Standards (AAQS). Federal and state air quality standards are listed in Table 3.2-1. Since publication of the PSPP PA/FEIS, the U.S. Environmental Protection Agency (USEPA) strengthened the annual National AAQS for $PM_{2.5}$ from to 15.0 micrograms per cubic meter ($\mu g/m^3$) to 12.0 $\mu g/m^3$. EPA anticipates making initial attainment/nonattainment designations for the revised standard by December 2014, with those designations likely becoming effective in early 2015 (USEPA, 2013a). In addition, at the time the PSPP PA/FEIS was issued, USEPA was considering revising the 8-hour ozone standard to 0.070 ppm. However, in September 2011, the agency withdrew its draft revisions to the standard pending review of new scientific data, which is scheduled to be completed in 2013 (USEPA, 2013b).

The PSEGS is within the Mojave Desert Air Basin (MDAB), which includes portions of Kern, Los Angeles, San Bernardino, and Riverside Counties. The MDAB is governed by four air districts, including the Kern County Air Pollution Control District, the Antelope Valley Air Quality Management District (AQMD), the Mojave Desert AQMD, and the South Coast AQMD (SCAQMD). The project site is within the jurisdiction of the SCAQMD.

As described in the PSPP PA/FEIS, the eastern Riverside County portion of the MDAB is designated as non-attainment for the state ozone and PM_{10} standards. The MDAB is designated as attainment or unclassified for all federal criteria pollutant ambient air quality standards and for the state CO, NO_2, SO_2, and $PM_{2.5}$ standards. The state ozone standard is exceeded in this region due to long distance transport of pollutants from the Los Angeles Basin, while the PM_{10} exceedances tend to be a result of natural sources found in a desert environment and various land uses. These uses include off-highway vehicle (OHV) use, mining, and livestock grazing.

Ambient air quality in the project area is best represented by data from the nearest monitoring station, which is in Blythe; however, ozone is the only pollutant monitored at the Blythe monitoring station. The closest monitoring stations that monitor PM_{10} and $PM_{2.5}$ are in Indio and

TABLE 3.2-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8-hour	0.075 ppm (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 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[b]	0.18 ppm (339 µg/m^3)
Sulfur Dioxide (SO_2)	Annual	0.03 ppm	—
	24-hour	0.14 ppm	0.04 ppm (105 µg/m^3)
	3-hour	0.5 ppm (1300 µg/m^3)	—
	1-hour	0.075 ppm (195 µg/m^3)	0.25 ppm (655 µg/m^3)
Particulate Matter (PM_{10})	Annual	—	20 µg/m^3
	24-hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual	12 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
	Rolling 3-Month Average	0.15 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	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.

SOURCES: CARB, 2012; USEPA, 2013a.

Palm Springs. PM_{10} and $PM_{2.5}$ data from these stations are used to represent ambient conditions in the project area; however, use of those data is considered conservative because these stations are in the Salton Sea Air Basin, which is a federal non-attainment area for PM_{10} and $PM_{2.5}$. The Palm Springs monitoring station also monitors concentrations of CO and NO_2. Data from the Magnolia and Rubidoux monitoring stations in Riverside were used to supplement representative CO concentrations, and for representative SO_2 concentrations, respectively. Monitoring data from the station in Banning were used to supplement the representative NO_2 concentrations. Data from the Magnolia, Rubidoux, and Banning monitoring stations are also considered conservative for representation of ambient air pollutant concentrations in the project area because they are located in urban areas of the South Coast Air Basin as opposed to the remote desert area of the MDAB, where the Project is located. The ambient air quality data presented in the PSPP PA/FEIS are outdated; therefore, Table 3.2-2 presents the monitoring data for these stations for the most recent 3-year period (2009 through 2012) and includes the most restrictive applicable standards.

TABLE 3.2-2
CRITERIA POLLUTANT MAXIMUM AMBIENT CONCENTRATIONS

Pollutant	Site	Averaging Period	Units	2010	2011	2012	Limiting AAQS[a]
Ozone	Blythe	1-hour State	ppm	0.072	0.073	0.084	0.09
		8-hour State		0.068	0.068	**0.077**	0.07
PM_{10}	Indio	24-hour State	µg/m^3	**108.0**	**106.0**[b]	**125.0**	50
	Palm Springs			**144.8**	**86.1**[b]	**143.4**	
PM_{10}	Indio	Annual State	µg/m^3	**29.7**	**35.9**	**33.4**	20
	Palm Springs			18.3	18.1	16.1	
$PM_{2.5}$	Indio	24-hour Fed	µg/m^3	16.0	35.4	18.4	35
	Palm Springs			12.8	26.3	15.5	
$PM_{2.5}$	Indio	Annual Fed	µg/m^3	6.8	7.1	7.6	12
	Palm Springs			5.9	6.0	6.4	
CO	Palm Springs	8-hour State	ppm	0.56	0.65	0.45	9.0
	Riverside Magnolia			1.73	1.49	1.46	
NO_2	Banning	1-hour State	ppm	0.066	0.061	0.055	0.18
	Palm Springs			0.046	0.045	0.045	
NO_2	Banning	Annual	ppm	0.012	0.010	---	0.030
	Palm Springs			0.009	0.008	---	
SO_2	Rubidoux	24-hour Fed	ppm	0.005	0.001	0.001	0.04

NOTES:
[a] The limiting AAQS is the most stringent of the CAAQS or NAAQS for that pollutant and averaging period.
[b] The first and second highest 24 hour PM10 measurements in 2011 for Indio are considered to be a result of an exceptional event. Similarly, the two highest 24 hour PM10 measurements in 2011 for Palm Springs (i.e., 396.9 µg/m^3 and 265.7 µg/m^3) are considered to be a result of an exceptional event. Those data are not representative of average ambient conditions in Indio and Palm Springs; therefore, the next highest concentrations are provided in the table.

SOURCE: CARB, 2013.

As indicated in Table 3.2-2, the maximum 8-hour ozone concentrations measured in Blythe exceeded the state standard in 2011. With regard to PM_{10}, the maximum 24-hour concentrations measured in Indio and Palm Springs and the annual average at Indio exceeded the state standards during each of the three years during the study period. There were no other exceedances of the AAQSs during the 3-year study period.

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3.3 Climate Change

Section 3.3 of the PSPP PA/FEIS (p. 3.3-1 et seq.) provides an introduction to greenhouse gas (GHG) emissions and climate change, describes factors affecting GHG emissions, summarizes federal and state initiatives to address GHG emissions and associated climate impacts, discusses the potential effects of climate change, provides an inventory of GHG emissions, and discusses the existing GHG emissions that occur at the project site. Given the proximity of the site and the scale of influences on the global climate, many of these factors are relevant to the PSEGS. Accordingly, with the exception of the following discussion of GHG sources, emissions inventory update, and supplemental state regulatory authorities, information contained in PSPP PA/FEIS Section 3.3 is relied upon and has not been supplemented.

3.3.1 Existing Greenhouse Gas Emissions

Greenhouse Gas Sources

Anthropogenic GHG emissions in the United States derive mostly from the combustion of fossil fuels for transportation and power production. Energy-related carbon dioxide (CO_2) emissions, resulting from fossil fuel exploration and use, account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. More than half of the energy-related emissions come from large stationary sources such as power plants; approximately one-third derive from transportation; industrial processes, agriculture, forestry, other land uses, and waste management comprise a majority of the remaining sources (USEPA, 2012).

Statewide GHG Emission Inventory

Statewide emissions of GHG from relevant source categories for 2004 through 2010 are summarized in Table 3.3-1. Specific contributions from individual air basins such as the Mojave Desert Air Basin (MDAB) are included in the emissions inventory, but are not itemized by air basin. In 2010, California produced 451.6 million gross metric tons of CO_2 equivalent (CO_2e) emissions. Transportation was the source of 38 percent of the state's GHG emissions, followed by electricity generation at 21 percent, industrial sources at 19 percent, residential sources at 10 percent, and other sources comprising the remaining 12 percent (CARB, 2013).

TABLE 3.3-1
CALIFORNIA GREENHOUSE GAS EMISSIONS (million metric tons CO_2E)

Emission Inventory Category	2004	2005	2006	2007	2008	2009	2010
Transportation	183.5	186.3	187.0	187.4	178.2	173.3	173.2
Electric Power	116.3	108.9	105.6	115.0	121.2	103.6	93.3
Commercial and Residential	42.8	41.2	41.9	42.1	42.4	42.6	43.9
Industrial	97.0	96.0	94.3	91.9	94.3	83.6	86.0
Recycling and Waste	6.3	6.7	6.8	6.7	6.9	6.9	7.0
High Global Warming Potential	13.3	13.9	14.3	14.3	14.4	14.8	15.7

TABLE 3.3-1 (Continued)
CALIFORNIA GREENHOUSE GAS EMISSIONS (million metric tons CO_2E)

Emission Inventory Category	2004	2005	2006	2007	2008	2009	2010
Agriculture	33.2	33.5	34.6	33.44	34.3	32.8	32.5
Forestry	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Gross Emissions	**492.6**	**486.7**	**484.4**	**490.9**	**491.9**	457.8	451.6

SOURCE: California Air Resources Board (CARB), 2013.

3.3.2 Applicable Regulations, Plans, and Policies/Management Goals

State

There are a variety of statewide standards and regulations that have been implemented in California related to GHGs that may be applicable to the PSEGS, including the following:

Renewables Portfolio Standard

California's Renewables Portfolio Standard (RPS) was established in 2002 by Senate Bill 1078, and the initial standard has since been accelerated through a number of executive and legislative actions, the most recent of which, Executive Order S-14-08, is described below. The RPS program currently requires investor-owned utilities, electric service providers, and community choice aggregators to procure 33 percent of electricity from eligible renewable energy resources by 2020. The program is jointly implemented by the California Public Utilities Commission (CPUC) and the CEC.

Executive Order S-14-08

Executive Order S-14-08 was established by Governor Arnold Schwarzenegger in November 2008. Executive Order S-14-08 improves processes for licensing renewable projects by directing state agencies to create comprehensive plans to prioritize regional renewable projects based on an area's renewable resource potential and the level of protection for plant and animal habitat. To implement and track the progress of the Executive Order, the CEC and CDFW signed a Memorandum of Understanding formalizing a Renewable Energy Action Team to concurrently review permit applications filed at the state level to streamline the application process for renewable energy development. The specifics of this executive order include the following:

1. Requires retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020;

2. Requires various state agencies to streamline processes for the approval of new renewable energy facilities and determine priority renewable energy zones; and

3. Establishes the requirement for the creation and adoption of the Desert Renewable Energy Conservation Plan (DRECP) process for the Mojave and Colorado Desert regions.

This Executive Order does not include any specific requirements that pertain directly to the PSEGS. However, the PSEGS, as a renewable energy project, would help the utility contracting the power it generates to meet the established RPS standard. Senate Bill 2, enacted in 2011, codifies the requirement of 33 percent renewable electricity sources by 2020.

Sections 95350 to 95359, Title 17, California Code of Regulations

The purpose of this regulation is to achieve GHG emission reductions by reducing sulfur hexafluoride (SF_6) emissions from gas-insulated switchgears, such as circuit breakers, that would be required at the switch yard proposed for the PSEGS. Owners of such switchgear must not exceed maximum allowable annual emissions rates, which are reduced each year until 2020, after which annual emissions must not exceed 1.0 percent. They must regularly inventory gas-insulated switchgear equipment, measure quantities of SF_6, and maintain the records for at least 3 years. Additionally, the regulation requires that by June 1 of each year, each owner of gas-insulated switchgears must submit an annual report to the CARB's Executive Officer for emissions that occurred during the previous calendar year.

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3.4 Cultural Resources

Section 3.4 of the PSPP PA/FEIS establishes the environmental context for analyzing the potential impacts of the alternatives analyzed in that document on cultural resources. That section categorizes cultural resources as buildings, sites, structures, objects, and districts for the purposes of complying with NEPA and Section 106 of the NHPA. The kinds of cultural resources considered include prehistoric and historic-era archaeological, ethnographic, and built historic resources. Given the location of the PSEGS, which is substantially the same as the location evaluated in the PSPP PA/FEIS, the cultural resource discussion in the PSPP PA/FEIS as it pertains to the PSEGS solar field remains valid. However, the PSEGS proposes a gen-tie line route that deviates from the one analyzed in the PSPP PA/FEIS, the construction of two 760-foot (total height) solar power towers, and the extension of a natural gas line. The proposed secondary access road would be constructed within the natural gas line ROW corridor and the proposed redundant telecommunications line would be buried within the gen-tie line ROW corridor. Additionally, approximately 110 acres of the PSEGS ROW was not subject to archaeological survey for the PSPP. These elements were not considered in Section 3.4 of the PSPP PA/FEIS. Accordingly, the following sections contain supplemental cultural resource inventory data for the gen-tie line, solar power towers, and natural gas line proposed as part of the PSEGS.

3.4.1 Environmental Setting

The environmental setting, including geology and geoarchaeology, the prehistoric setting, the ethnographic setting, and the historic-era setting of the project area are described fully in the PSPP PA/FEIS, as is a discussion of the types of resources that are often found in the Mojave and Colorado Desert regions. The environmental setting is applicable to the PSEGS.

Cultural Resources Inventory

The PSPP PA/FEIS provides the results of cultural resource inventories for the PSPP, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, Native American consultation, and field investigations. A full discussion of the cultural resources that have been recorded within the PSPP area may be found in the PSPP PA/FEIS. While the cultural resource descriptions in the PSPP PA/FEIS that pertain to the PSEGS solar field remain valid, the BLM is collecting new information for those components of the PSEGS that were not previously analyzed.

The proposed natural gas line was included within the survey area for the PSPP. The proposed gen-tie line reroute was included in the Class III Survey for the Desert Sunlight project in 2009 and 2010. The BLM is conducting supplemental cultural resource inventory studies necessary to determine whether and what types of cultural resources could be affected by the PSEGS's power tower construction and its slight project boundary change. These studies include:

1) Updated Class I Survey (archaeological archival records search) for the PSEGS ROW and a 15-mile radius;

2) Class II archaeological sample survey of part of the PSEGS where there is a high possibility that new archaeological resources may be exposed due to changing surface conditions, including the re-evaluation/re-recordation of all historic and prehistoric sites within the PSEGS direct Area of Potential Effects (APE);

3) Class III archaeological inventory of the previously unsurveyed 100 acres within the PSEGS footprint;

4) Subsurface testing at the two PSEGS power tower locations;

5) Update for the built environment prepared for PSPP, expanding the study area up to 15 miles from the PSEGS ROW;

6) Ethnographic literature review; and

7) Evaluation of indirect effects (visual) for the solar towers.

A portion of the Class I Study has been completed (Contreras et al., 2013); however, the other studies remain in progress. Upon completion of these studies by the Applicant, this section and the corresponding discussion of environmental consequences in Chapter 4 will be updated and made available for review in the Final EIS.

Native American Consultation

The PSPP PA/FEIS provides the results of Native American consultation for the PSPP through May 2011. The BLM is engaged in ongoing consultation with Indian Tribes regarding the changes to the solar project proposal that have occurred since May 2011. Tribal consultation is an ongoing process that will continue through the permit processing, through any decision, and through implementation should one of the action alternatives be approved. It will not be completed prior to the Final EIS. Tribal Consultation is described more fully in Chapter 5, *Consultation, Coordination and Public Involvement.*

Impacts to cultural resources of importance to Indian tribes have yet to be fully identified. BLM is awaiting the results of an ethnographic literature review and indirect effects analysis. Once completed, these studies, in conjunction with ongoing consultation with Indian tribes, will provide information regarding potential effects of the PSEGS on such resources.

Based on the request and recommendation of tribes, the BLM is evaluating impacts related to views of the PSEGS from new Key Observation Points (KOP) that were not considered in the PSPP PA/FEIS. See Section 4.18, *Impacts to Visual Resources*, regarding the new KOPs. As described and analyzed in Section 4.18, the PSEGS would be visible from some of these KOPs; however, specific impacts to cultural resources or tribal values as a result of this have yet to be identified. Input regarding these potential effects is invited from reviewers of the Draft SEIS.

Archaeological Resources

The PSPP PA/FEIS provides the results of archaeological resource inventories for the PSPP, including literature and records searches and field investigations. A full discussion of the archaeological resources that have been recorded within the PSPP area may be found in the PSPP PA/FEIS.

The proposed extension of the natural gas line was included within the survey area for the PSPP. No archaeological sites were identified within the ROW corridor for the natural gas line extension. The proposed gen-tie line reroute was included in the Class III Survey for the Desert Sunlight project in 2009 and 2010. No archaeological sites were identified within the portion of the ROW where the gen-tie line rerouting is proposed.

The BLM is awaiting the results and conclusions of supplemental archaeological resource inventory studies necessary to determine whether and what types of archaeological resources could be affected by the PSEGS. Upon completion of these studies by the Applicant, this section and the corresponding discussion of environmental consequences in Chapter 4 will be updated and made available for review in the Final EIS.

A draft of the Class I Study, which consists of an archival records search for the PSEGS area and a 15-mile radius, has been completed and is summarized here (Contreras et al., 2013). It should be noted that this study identifies previously-recorded archaeological resources within the PSEGS site and adjacent areas, and does not represent a full inventory of cultural resources that could be affected. The Class II and Class III studies, once completed, will provide a more complete inventory of archaeological resources that could be affected by the PSEGS.

A records search for the proposed PSEGS site and a 15-mile buffer zone was conducted on May 29 and 30, and June 5 and 19, 2013 at the Eastern Information Center, located at the University of California, Riverside. The records and literature search results indicated 1,129 previously recorded cultural resources (600 archaeological sites and 529 isolates) within the proposed PSEGS ROW and 15-mile radius. Of the 600 sites, 347 are historic-era, 214 are prehistoric, 6 are multi-component (containing both historic-era and prehistoric components) sites, and 33 are of an unknown age. Of the 529 isolates, 240 are historic-era, 285 are prehistoric, and 4 are of an unknown age.

One study has been completed and several more are in progress that to identify the potential for the PSEGS to affect buried (subsurface) archaeological resources. A geoarchaeological assessment of the PSEGS area (Nials, 2013) was prepared and is based on a review of available literature regarding the Chuckwalla Valley and Palen Dry Lake sub-basin, examination of high-resolution satellite and traditional imagery, and in-field examination of the project area and selected parts of Chuckwalla Valley and adjacent areas.

The report identified the former presence of pluvial lakes that may have existed prior to the late Pleistocene; however, no lakes were identified that would coincide with human occupation of the area. Most land surfaces within the footprint area are younger than 5,000 years old, and most are younger than 3,000 years old. The PSEGS area is situated on an alluvial fan that contains few flora or faunal, or water resources. Most prehistoric sites in and near the PSEGS ROW are situated on alluvial fan surfaces, which have been modified by channel shift, channel erosion and deposition, aeolian deflation and deposition, bioturbation, and pedogenic processes, resulting in sites with low spatial or stratigraphic integrity.

Because of surface and subsurface flow, relatively thick sands and numerous niche environments (the most likely area for the presence of prehistoric archaeological resources) is located on the eastern/northern side of the drainage between Palen basin and Ford Dry Lake basin and located more than 1 mile outside the proposed PSEGS ROW.

The report concluded that the overall likelihood of encountering buried cultural deposits within the PSEGS area was low, but was most likely within distal alluvial fan segments that overlap with aeolian sand transport corridors.

The two proposed power towers are located within middle alluvial fan segments, which the geoarchaeological report identified as having “highly improbable” likelihood of producing buried archaeological deposits. Nevertheless, this possibility could not be entirely discounted, and so subsurface testing will occur within the two power tower locations. Based on the lack of prior subsurface testing and the degree of proposed construction disturbance at this location, it was identified that subsurface testing in the tower base areas could provide information regarding the possibility of buried archaeological sites, features, or artifacts in this area. Subsurface testing is currently underway. Upon completion of these tests by the Applicant, this section and the corresponding discussion of environmental consequences in Chapter 4 will be updated and made available for review in the Final EIS.

Built Environment Resources

The PSPP PA/FEIS provides the results of built environment resource inventories for the PSPP. An archival records search for the PSEGS ROW and a 15-mile radius has indicated that there are 17 recorded built environment resources within a 15-mile radius of the ROW (Contreras et al, 2013). The BLM is awaiting supplemental built environment resource inventory studies necessary to determine whether and what types of built environment resources could be affected by the PSEGS. Upon completion of these studies by the Applicant, this section and the corresponding discussion of environmental consequences in Chapter 4 will be updated and made available for review in the Final EIS.

3.5 Environmental Justice

Section 3.5 of the PSPP PA/FEIS establishes the context for examining impacts of the PSPP and alternatives upon minority and low income populations. The document summarizes federal laws, policies, and guidelines pertinent to a NEPA analysis, including the Civil Rights Act of 1964, Executive Order 12898, and the CEQ's Environmental Justice Guidance. Each remains applicable to the PSEGS and does not require supplement. The PSPP PA/FEIS also discusses the distribution of minority and low income populations that could be affected by such development. Described more fully below, these discussions have been revised in this Draft SEIS to reflect updated demographic data.

3.5.1 Minority Populations

According to the CEQ, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population, for the purposes of environmental justice considerations, is identified when the minority population of the potentially affected area is greater than 50 percent or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ, 1997).[1]

Table 3.5-1 presents the minority population composition of planning areas in the vicinity of the proposed project site, based on the 2007-2011 American Community Survey (ACS). The populated area nearest the site is the community of Desert Center, represented in the ACS as ZIP Code Tabulation Area (ZCTA) 92239. The minority population represents 50 percent of this community.

In addition to Desert Center, information is shown for the nearby city of Blythe and for Riverside County as a whole. Both have minority population greater than 50 percent. Thus, in all planning areas around the proposed site, minority populations meet or exceed 50 percent of the total population.

3.5.2 Low Income Populations

Unlike the CEQ (1997) guidance on minority populations, none of the environmental justice guidance documents contain a quantitative definition of what proportion of low-income individuals defines a low-income population. In the absence of guidance, this analysis relies on the density used to identify a minority population as "meaningfully greater" than the general population also to identify low-income populations. Thus, if the proportion of individuals living under the poverty line is 150 percent or more than that of the general population, this analysis considers that community to be a low-income population.

[1] According to the CEQ guidelines, "Minority" is defined as all persons except non-Hispanic whites. In other words, minority is defined as all racial groups other than white, and all persons of Hispanic origin, regardless of race.

TABLE 3.5-1
RACIAL AND INCOME CHARACTERISTICS FOR RESIDENTS WITHIN THE ENVIRONMENTAL JUSTICE STUDY AREA

Geographic Area	**Total Population**	**Total (Percent) Minority (Other Than Non-Hispanic White)**	**Median Household Income**	**Proportion of the Population Living Below the Poverty Level (Percentage Low-Income)**
Desert Center[a]	284	142 (50.0%)	$57,083	0.0%
Blythe	21,202	14,358 (68.0%)	$46,235	11.3%
Riverside County	2,154,844	1,317,315 (61.0%)	$58,365	10.8%

NOTE:
[a] ZCTA 92239

SOURCE: U.S. Census Bureau, 2013.

As shown in Table 3.5-1, the 2007-2011 ACS reported that the median household income for Riverside County was $58,365, with 10.8 percent of households reporting incomes below the poverty level. The City of Blythe reported both a lower median income and a slightly higher (11.3 percent) proportion of households with incomes below the poverty level. The community of Desert Center had a similar median income to the County, but reported no households with incomes below the poverty level. Because neither population meets the definition of a meaningfully greater low-income population than Riverside County as a whole, neither the City of Blythe nor the community of Desert Center are considered to be low-income populations for the purposes of this analysis.

3.6 Lands and Realty

Section 3.6 of the PSPP PA/FEIS (p. 3.6-1 et seq.) summarizes BLM's land management activities on BLM lands, and specifically those activities pertinent to solar development. The document describes the Solar PEIS and its associated land use designations applicable to utility-scale solar energy development on BLM-administered lands. The Solar PEIS ROD was signed on October 12, 2012, after publication of the PSPP PA/FEIS. Accordingly, this section includes an updated description of the land use decisions applicable to the PSEGS area that were made through the Solar PEIS ROD. The PSPP PA/FEIS describes the establishment, pursuant to FLPMA Section 503 and Energy Policy Act Section 368, of corridors designated for energy transmission infrastructure. Because these documents also apply to the PSEGS, that discussion does not require supplement. The PSPP PA/FEIS also describes the components of the PSPP and alternatives as they relate to the underlying land use designations. As the PSEGS components and extent are different from those of the PSPP, this Draft SEIS includes a revised discussion of existing land use conditions.

3.6.1 Background

Section 503 of FLPMA authorizes the establishment of corridors, to the extent practical, to minimize adverse environmental impacts and the proliferation of separate ROWs. Through its planning efforts, the PSSCFO has designated corridors throughout the Field Office boundaries that generically are identified as "locally-designated corridors" and specifically are identified by an alphabetical reference.

Section 368 of the Energy Policy Act directs the Secretary of the Departments of the Interior, Defense, Energy, Agriculture, and Commerce to designate corridors for oil, gas, hydrogen pipelines and electric transmission lines on federal land in the 11 western states, perform necessary reviews, and incorporate those designations into land use, land management or equivalent plans. Implementing this section, the *Approved Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States* signed January 14, 2009, established corridors (generically identified as "368 corridors" and specifically identified by a numerical reference) pursuant to Section 368 of the Energy Policy Act of 2005.

The BLM signed the ROD for the Solar PEIS on October 12, 2012. The land use plan amendments established through the Solar PEIS ROD include the designation of: exclusion areas for utility-scale solar energy development, priority areas that are well suited for utility-scale production of solar energy (i.e., SEZs), and areas potentially available for utility-scale solar energy development outside of SEZs in the six-state study area (i.e., variance areas). The PSPP application (CACA-48810) was filed in 2008 in an area that now is designated the Riverside East SEZ. The PSPP application, however, is not subject to the Solar PEIS ROD or the CDCA Plan amendments made as a result of that decision. See Section 1.5.1 of this Draft SEIS, which describes the relationship of the PSEGS to the Solar PEIS.

3.6.2 Existing Condition

Interstate-10 lies within a corridor identified as "Corridor 30-52, 2 miles in width" that overlies locally-designated Corridor K (2 miles in width). These corridors lie south of the proposed site on a generally east-west heading. Numerous other linear ROWs also lie within and to the north and south of these two designated overlapping corridors.

The southern portion of the PSEGS site would lie within the northern portion of both designated corridors. A portion of the gen-tie line and redundant telecommunications line also would overlap Corridors K and 30-52.

Construction power would be provided to the site by one or a combination of three ways. The PSPP proposed to obtain all of its construction power from SCE via two alternative sources of construction power. Both sources would feed from the 12.47 kV distribution system in Desert Center on Rice Road. The first alternative for PSPP construction power would be a new 12.47 kV line built within the 161 kV ROW from Rice Road to the project site. The second alternative would be a new 12.47 kV line built within the surveyed 230 kV transmission line ROW from Rice Road to the project site. This line would be built as a combination of new 12.47 kV line or hung on the new 230 kV transmission line towers that connects the single circuit 230 kV line to the project site. The project would include construction of a 12.47 kV internal distribution system and step down transformers to provide power as needed for construction operations. The PSPP PA/FEIS thoroughly evaluated these options.

For the PSEGS, construction power also could be provided through the early construction of the proposed gen-tie line and backfeeding of power to the site switchyard. In that case, the gen-tie line would be completed before major construction power demands at the site. As an alternative, the PSEGS could employ the use of diesel fired generators for its construction power. The effects of all options are evaluated in this analysis.

As described in the Revised POD for the PSEGS (Palen Solar III, LLC, 2013), primary site access would be provided from the I-10/Corn Springs Road interchange. The road would be a 1,350-foot long, 24-foot wide, paved, and constructed from a point just north of the I-10/Corn Springs Road entrance/exit ramps east to the site entrance. It would include a 12-foot wide shoulder with gravel surface to allow for truck staging on one side without interfering with traffic. The road would lie within the northern portion of Corridors K and 30-52.

The BLM is awaiting information regarding the location and dimensions of emergency ingress/ egress for the PSEGS. Pending receipt of PSEGS-specific details, the location of the secondary (emergency) accessway is assumed to be similar to that analyzed in the PSPP PA/FEIS (see, e.g., PSPP PA/FEIS, p. 4.6-1). This section and the corresponding discussion of environmental consequences in Chapter 4 will be updated in the Final SEIS when PSEGS-specific emergency ingress/egress information is provided.

Several transmission line projects are, or are planned to be, within the designated corridors. These include the Devers-Palo Verde No. 1 (DPV1) Transmission Line, Devers-Palo Verde 2 (DPV2)

Transmission Line, Desert Southwest Transmission Line, , and the Blythe Energy Project Transmission Line. DPV1 is an existing 500 kV transmission line which spans approximately 128 miles of land within California paralleling I-10. DPV1 is located within Corridors K and 30-52. DPV2 is a 500 kV transmission line that parallels DPV1 and is located along the south side of I-10. Desert Southwest Transmission Line is an approximately 18 mile 500 kV transmission line that parallels DPV1. The transmission line runs from a new substation/ switching station near the Blythe Energy Project to the existing Devers Substation. Blythe Energy Project Transmission Line includes modification to 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds substation, upgrades to the Julian Hinds Substation, and the installation of 6.7 miles of 230 kV transmission lines between Buck Substation and DPV1. The Blythe Energy Project Transmission Line is located within the existing federally-designated utility corridors along I-10.

SCE's existing 161 kV Eagle Mountain-Blythe power line runs in a northwesterly direction across the southwest portion of the proposed site, and a portion of the Eagle Mountain FERC project's transmission withdrawal also runs through this area.

The gen–tie line proposed for the PSEGS would involve a minor route adjustment near the western end of the route and around the substation to align the PSEGS gen-tie line immediately adjacent to the NextEra Desert Sunlight gen-tie line, which would minimize crossings over I-10 and ensure easy entry into the Red Bluff Substation nearest the PSEGS breaker position, which was relocated as part of the Red Bluff final design subsequent to publication of the PSPP PA/FEIS.

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3.7 Livestock Grazing

As described in Section 3.7 of the PSPP PA/FEIS, and shown on Map 2-8 of the NECO Plan (BLM CDD, 2002), there are no livestock grazing allotments within or adjacent to the PSPP ROW application area. This also is true for the PSEGS.

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3.8 Mineral Resources

Section 3.8 of the PSPP PA/FEIS describes the geologic environment and the mineral resource potential of the PSPP ROW application area. The site is situated on an alluvial fan within the northwest-trending Chuckwalla Valley, between the Chuckwalla Mountains to the southwest and the Palen Mountains to the northeast. The site is underlain by alluvial and eolian deposits[1] that are between 11,000 and 1.6 million years old. Depth to groundwater is approximately 180 feet below ground surface (bgs). The site is not underlain by known faults or active faults designated by the State of California as Alquist-Priolo Earthquake Fault Zones. According to the BLM's LR 2000 records, Sections 28, 29, 31, 32, & 33, T.5S., R17E., were under lease for geothermal resources and oil and gas at one time. Although there are no active mining claims or mineral leases within the site, the area is classified as "prospectively valuable for geothermal resources," which means that it has moderate potential for the occurrence of geothermal resources and prospecting is still a viable potential use. The proposed use of minerals from the site, to the extent necessary, would be limited to the use of sand and gravel for project-related construction needs and possibly prospecting for geothermal resources.

The PSEGS, including the proposed gen-tie line reroute and new natural gas line, would be constructed atop the same geologic formations as are described in the PSPP PA/FEIS. As a result, the project study area for purposes of mineral resources analysis is the same as that presented in the PSPP PA/FEIS. Accordingly, that discussion also is valid for the PSEGS and does not require supplementation.

As a possible mechanism to support the establishment of priority areas for utility-scale solar energy development, the Secretary of the Interior may decide to withdraw the public lands encompassed by SEZs (such as the Riverside East SEZ, which includes the PSEGS site) from potentially conflicting uses through the issuance of a Public Land Order. If approved, the public lands in SEZs would be withdrawn, subject to valid existing rights, from settlement, sale, location, or entry under the general land laws, including the mining law.

On June 30, 2009, the BLM sought and received permission from the Secretary of the Interior to issue a notice of proposed withdrawal for the original 24 identified Solar Energy Study Areas. This Federal Register notice (Volume 74, page 31308) segregated the public lands encompassed in the 24 Solar Energy Study Areas (approximately 676,000 acres) for up to 2 years from surface entry and mining, while various studies and analyses were conducted to support a final decision on withdrawing the land from conflicting uses. On April 21, 2011, the BLM amended the proposed withdrawal through a notice in the Federal Register (Volume 76, page 22414) to reflect acreage adjustments for the SEZs. The BLM's temporary segregation expired on June 29, 2011.

On June 30, 2011, the BLM applied a new interim temporary final rule to the 24 proposed SEZs to avoid a lapse in the existing segregation. On the basis of the application of the interim temporary final rule, the terms of the segregation for the 24 proposed SEZs remain unchanged

[1] Alluvial deposits are unconsolidated layers of rocks, sand, mud, and other earth materials deposited on land by the movement of water. Eolian deposits are sand, silt, and other earth materials deposited on land by the wind.

(and continue to include the Riverside East SEZ, and therefore the PSEGS site). It was set to expire June 30, 2013; however, on June 27, 2013, DOI Assistant Secretary for Policy, Management and Budget signed Public Land Order No. 7818 withdrawing the 17 SEZs that were carried beyond the Draft Solar PEIS stage from location and entry under the United States mining laws, subject to valid existing rights, for a period of 20 years in order to protect the SEZs for future solar energy development. The lands have been and will remain open to mineral and geothermal leasing, and mineral materials sales.

3.9 Multiple Use Classes

Section 3.9 of the PSPP PA/FEIS describes the BLM's CDCA Plan of 1980, as amended; its classification system; and the multiple-use class designations assigned to CDCA lands in East Riverside County. As the PSEGS would occur on lands with the same designation as those addressed in the PSPP PA/FEIS (Multiple Use Class-M), that discussion does not require supplement. For a more detailed description of land use and resource management guidelines within the designated Multiple Use Class-M (MUC-M) areas, see PSPP PA/FEIS Table 3.9-2.

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3.10 Noise

Section 3.10 of the PSPP PA/FEIS establishes the basis for the noise impact analysis of the PSPP and alternatives to the PSPP. The PSEGS location and nearby sensitive receptors, for purposes of noise analysis, remain essentially the same as those identified in the PSPP PA/FEIS. The rerouted gen-tie line and new gas line extension would not be routed in the vicinity of any sensitive receptors. Accordingly, the PSPP PA/FEIS's discussions of baseline noise levels and applicable regulatory standards (i.e., Chapter 9.52, Noise Regulation, of the Riverside County Code) are valid and are not supplemented for the PSEGS.

As identified for the PSPP, the sensitive receptors in the project vicinity include two residences and sensitive wildlife habitat areas. The nearest residence is located approximately 25 feet from the proposed site's northwestern boundary, while the other residence is located approximately 3,500 feet northwest of the site boundary. Although the nearest residence is 25 feet from the project's northwestern boundary, it is approximately 1 mile from the closest proposed PSEGS power block (Unit 1). The bighorn sheep Wildlife Habitat Management Area (WHMA), approximately 2.5 miles northeast of the site, is a sensitive noise receptor due to the presence of breeding Nelson's bighorn sheep. Furthermore, sensitive bird nesting habitat also occurs in the adjacent creosote scrub and desert dry wash woodland. The existing ambient noise levels at the two residences and the applicable noise standards for the PSEGS site are depicted in Tables 3.10-1 and 3.10-3, respectively, of PSPP PA/FEIS Section 3.10.

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3.11 Paleontological Resources

Section 3.11 of the PSPP PA/FEIS describes the geologic environment and the paleontological resources potential of the PSPP area. For purposes of paleontological analysis, the PSEGS study area is generally the same as that described for the PSPP and alternatives to the PSPP. As such, the PSPP PA/FEIS descriptions remain valid and do not require extensive supplement.

The PSEGS site is located entirely on mostly undisturbed, BLM-administered federal land. The Paleontological Resources Preservation Act of 2009 requires the BLM to manage and protect paleontological resources on Federal land using scientific principles and expertise. The term "paleontological resource" means any fossilized remains, traces, or imprints of organisms, reserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth, except that the term does not include: (A) any materials associated with an archaeological resource (as defined in section 3(1) of the Archaeological Resources Protection Act of 1979 (16 U.S.C. §470bb(1)); or (B) any cultural item (as defined in section 2 of the Native American Graves Protection and Repatriation Act (25 U.S.C. §3001).

The near-surface geology beneath the PSPP Project site consists primarily of Quaternary-aged (up to 1.8 million years old) eolian and lacustrine sediments (i.e. dune sands, alluvium and lake deposits), which range in age from Holocene (up to 10,000 years old) at the surface to Pleistocene (between 10,000 and 1.8 million years old) and older at depth. Pleistocene age alluvium exposed along the southwestern boundary of the site underlies younger alluvium and lacustrine sediments. Coarse-grained alluvial sediments grade laterally and are interbedded with ancient lakebed deposits of similar ages.

A paleontological resource assessment was prepared to support the PSPP PA/FEIS (SWCA, 2009, in PSPP PA/FEIS Appendix F). The assessment included review of museum records regarding known fossil localities and stratigraphic unit sensitivity within the proposed project area and a field survey.[1] All research was conducted in accordance with accepted assessment protocols of the Society for Vertebrate Paleontology to determine whether any known paleontological resources exist in the general area.

The museum records reviewed indicate there are no recorded fossil collection sites within the requested ROW application area or within a 1-mile radius. However, three vertebrate fossil collection areas have been documented outside the ROW boundary within similar Quaternary alluvium units and the Quaternary-aged Pinto formation underlying the site (SWCA, 2009). Fossil remains have included a pocket mouse located east-southeast of the site, and tortoise, horse, and camel in the northern Chuckwalla Valley.

Five non-significant fossil occurrences were recorded during the comprehensive field survey of the PSPP PA/FEIS Project Area. Four specimens were petrified wood and the fifth specimen was

[1] Paleontological information for the PSPP PA/FEIS was provided through the Natural History Museum of Los Angeles County, University of California Berkeley Museum of Paleontology, and the Riverside County Land Information System.

a potential mammal jaw fragment. These specimens were discovered in Quaternary younger alluvium and Quaternary intermediate alluvium *ex situ* (removed from their original place of fossilization) (SWCA, 2009).

Considering the geology of the site and the identification of fossil remains in similar geologic units outside the project site, the probability that paleontological resources will be encountered during grading and excavation of the alluvial sediments anywhere within the PSEGS site, varies from low to high as the depth of disturbance increases. In addition, within some areas of the proposed natural gas-line corridor, the report indicates the probability of such an encounter at the surface is high.

3.12 Public Health and Safety

Section 3.12 of the PSPP PA/FEIS describes a range of public health and safety considerations pertinent to the PSPP site, the PSPP, and alternatives to the PSPP. These include hazardous materials/hazardous waste management, unexploded ordnance (UXO), undocumented immigrants (UDI), transmission line safety and nuisance, traffic and transportation (including aviation) safety, worker safety and fire protection, and geologic hazards. As the PSEGS location and components are similar to those of the PSPP, much of this information applies equally to the PSEGS. As such, with the exception of the following discussions, the information contained in PSPP PA/FEIS Section 3.12 (p. 3.12-1 et seq.) is valid and is not supplemented.

3.12.1 Hazardous Materials

As explained in PSPP PA/FEIS Section 3.12.2 (p. 3.12-1 et seq.), several factors associated with the project location affect the potential for an accidental release of hazardous materials that could cause public health impacts. The meteorological conditions, terrain characteristics, and existing public health concerns at the site have not changed since the PSPP PA/FEIS was issued. However, the existing discussions of the location and characteristics of nearby population centers (PSPP PA/FEIS, p. 3.12-1) and the existing environmental site contamination (PSPP PA/FEIS, p. 3.12-2) do require supplement. Discussions of these two factors follow.

Location of Exposed Populations and Sensitive Receptors

The general population includes many sensitive subgroups that could be at risk from exposure to emitted pollutants. Sensitive receptors are people who are particularly susceptible to illness, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise, or locations or institutions that may be occupied predominantly by one or more of these sensitive subgroups, such as residences, schools, hospitals, and hospices. The location of the population in the area surrounding a project site may have a major bearing on health risk. The nearest housing units are over 1.5 miles to the northwest of the proposed gen-tie realignment (U.S. Census, 2013). These housing units are more than 4.5 miles from the nearest portion of the proposed solar field. Otherwise, there are no sensitive receptors within a 3-mile radius of the project site. Approximately 197 people live within a 6-mile radius of the site. The nearest school (Eagle Mountain Elementary School) is about 10 miles west of the site.

Existing Environmental Site Contamination

The Phase I Environmental Site Assessment conducted for the PSPP site in 2009 found no “Recognized Environmental Conditions” per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage, or disposal of hazardous substances on the site, nor was there any other environmental concern that would require remedial action (AECOM, 2009). The updated records search conducted for the PSEGS confirmed no listings (EDR, 2013). According to the databases of the California Department of Toxic Substances Control and the California State Water Resources Control

Board, there are no records of any use, spillage, or disposal of hazardous materials on land crossed by the proposed gen-tie line reroute or the new natural gas pipeline.

3.12.2 Waste Management

The Riverside County Waste Management Department operates six landfills, has a contract agreement for waste disposal with an additional private landfill, and administers several transfer station leases (see Table 3.12-1, *Solid Waste Disposal Facilities*, for the capacities of landfills that are available to receive solid waste generated by the PSEGS). The California Integrated Waste Management Act requires that each jurisdiction reuse, recycle, compost, or otherwise divert 50 percent of its annual waste away from landfills or show a good faith effort to reach this goal. The unincorporated areas of Riverside County currently meet their diversion goal, in addition to adopting the necessary plans and policies to comply with the act (CalRecycle, 2011). The combined remaining capacity of these nine landfills that could receive project waste (this excludes the Desert Center Landfill) is more than 189 million cubic yards. Desert Center Landfill is only open to receive Class III waste on the first Thursday of February and August each year (RCWMD, 2013b), and, as a result, is not expected to be a reliable repository for solid waste generated by the PSEGS.

TABLE 3.12-1
SOLID WASTE DISPOSAL FACILITIES

Waste Disposal Site	Title 23 Class	Maximum Permitted Capacity (Cubic Yards)	Current Operating Capacity (Tons/Day)	Remaining Capacity (Cubic Yards)	Estimated Closure Date
Badlands Sanitary Landfill	Class III	33,560,993	4,000	14,730,025	2024
Lamb Canyon Sanitary Landfill	Class III	34,292,000	3,000	18,955,000	2021
Oasis Sanitary Landfill	Class III	494,822	400	149,597	2021
Blythe Sanitary Landfill	Class III	6,034,148	400	4,159,388	2047
El Sobrante Landfill	Class III	184,930,000	16,054	145,530,000	2045
Monofill Facility	Class II	1,729,800	750	1,058,252	2025
Chiquita Canyon Sanitary Landfill	Class II, III	63,900,000	6,000	29,300,000	2019
Kettleman Hills Landfill	Class I	10,700,000	8,000	50,000	
Clean Harbors Buttonwillow Landfill	Class I	14,293,760	10,482	8,884,000	2043

Class I landfill – A landfill that accepts for disposal 20 tons or more of municipal solid waste daily (based on an annual average) including permitted hazardous wastes.

Class II landfill – A landfill that (1) accepts less than 20 tons daily of municipal solid waste (based on an annual average); (2) is located on a site where there is no evidence of groundwater pollution caused or contributed by the landfill; (3) is not connected by road to a Class I municipal solid waste landfill, or, if connected by road, is located more than 50 miles from a Class I municipal solid waste landfill; and (4) serves a community that experiences (for at least 3 months each year) an interruption in access to surface transportation, preventing access to a Class I landfill, or a community with no practicable waste management alternative.

Class III landfill – A landfill that is not connected by road to a Class I landfill or a landfill that is located at least 50 miles from a Class I landfill. Class III landfills can accept no more than an average of 1 ton daily of ash from incinerated municipal solid waste or less than 5 tons daily of municipal solid waste.

SOURCES: RCWMD, 2013a; CalRecycle, 2013

The USEPA currently is reviewing the permits of the Kettleman Hills Landfill B-18, the Class I facility at Kettleman (USEPA, 2012). Remaining capacity of the facility listed in Table 3.12-1 reflects the status of the landfill in December 2012. If the permits for facility expansion are approved, an additional 4.9 million cubic yards would be available and would increase the remaining capacity to 4.95 million cubic yards.

3.12.3 Transmission Line and Power Tower Aviation Safety

As discussed in PSPP PA/FEIS Section 3.12.6 (p. 3.12-4), the project site is not located near a major commercial aviation center. The closest airfield to the site is the privately-operated Desert Center Airport, which is located at the end of an unnamed road, 1 mile (1.6 km) east of State Route 177 (Desert Center – Rice Road) and 5 miles (8.0 km) northeast of the town of Desert Center; this is approximately 5 miles northwest of the proposed solar field and approximately 2 miles from the proposed gen-tie line realignment. Riverside County sold the airfield to Chuckwalla Valley Associates, LLC, in 2004. The most recent information available from the Federal Aviation Administration (FAA) indicates 150 aircraft operations per year are performed at Desert Center Airport (FAA, 2013; AirNav, 2013). The next closest airport (Blythe Airport) is located about 30 miles east of the site.

Airspace Protection

The purpose of airspace protection policies is to avoid the development of land use conditions, which, by posing hazards to flight, can increase the risk of an aircraft accident occurring. The foundation of airspace protection policies is rooted in Title 14, Code of Federal Regulations (CFR) Part 77 regarding safe, efficient use, and preservation of the navigable airspace (14 CFR Part 77). 14 CFR Part 77 establishes a set of imaginary surfaces that extend outwards and upwards away from the runway surface in a bowl-like pattern. Both man-made and natural objects such as buildings, antennas, and trees that penetrate these imaginary surfaces are considered potential obstructions to aircraft in flight (FAA, 2011).

14 CFR Part 77 identifies criteria that govern which projects require notice to be filed with the FAA as well as identifying standards for determining whether a proposed project would represent an obstruction "that may affect safe and efficient use of navigable airspace and the operation of planned or existing air navigation and communication facilities." Objects that are identified as obstructions based on these standards are presumed to be hazards until an aeronautical study conducted by the FAA determines otherwise.

14 CFR Part 77.9, which governs the types of construction or alteration requiring notice, indicates that notice must be filed with the FAA for any construction or alteration of objects within 20,000 feet of a public use airport runway when the height of the objects exceeds (i.e., is taller than) an imaginary surface with a 100:1 (1 foot upward per 100 feet horizontally) slope from the nearest point of the nearest runway. This requirement applies when the airport has at least one runway that exceeds 3,200 feet in length; for shorter runways the notification surface has a 50:1 slope and extends 10,000 feet from the runway. The FAA also requires filing of notice with the FAA for any construction or alteration of objects that are more than 200 feet above ground level

(AGL) at the site. There are no public use airport runways within 20,000 feet of the project site; however, the height of the two power towers will exceed 200 feet AGL. Based on the height of the proposed power towers, compliance with FAA Advisory Circular No. AC 70/7460-1K (regarding obstruction marking and lighting) would require aviation lighting to be provided on those structures.

Hazardous Wildlife Attractants

Wildlife that is hazardous to aircraft in operation, and the types of land uses that attract them, have become an increasing focus of the FAA and airport operators over the last few years. FAA guidance documents, such as AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*, asks airport operators, local planners, and developers to consider whether a proposed land use will increase wildlife hazards. A variety of land use types and activities, including certain energy and industrial uses, have been identified by the FAA as potential hazardous wildlife attractants. The FAA definition of wildlife attractants includes human-made or natural areas, such as poorly drained areas, retention ponds, agricultural activities, and wetlands (FAA, 2007). The proposed evaporation ponds are also a potential wildlife attractant.

Communication System Interference

According to the FAA, communication systems interference can be caused by solar technologies that cause a negative impact on radar, NAVAIDS, and infrared instruments (FAA, 2010a). Radar interference occurs when objects are placed too close to a radar sail (or antenna) and reflect or block the transmission of signals between the radar antenna and the receiver (either a plane or a remote location). NAVAIDS can be impacted similarly to radar, but they include passive systems with no transmitting signals. Impacts on infrared communications can occur because the solar panels continue to retain heat into the first part of dusk and the heat they release can be picked up by infrared communications in aircraft causing an unexpected signal.

Although it is possible for communication system interference to be caused by other communication signals, it is less common. Transmission line related radio frequency interference is produced by the physical interactions of line electric fields and is a potential indirect effect of transmission line operation. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. Because of the power loss from such corona discharges, it is in the interest of each line proponent to employ design, construction, and maintenance plans that minimize them. When generated, such corona noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication when the signal is amplitude modulated (AM). Such radio interference is the buzzing and crackling noise one might hear from the speaker of an AM broadcast receiver when near a transmission line. The potential for corona-related interference generally becomes a concern for lines with voltage of 345 kV and above, and less so for lines such as the proposed 230 kV transmission line.

Frequency modulated (FM) signals normally are unaffected as are modern digital signals such as those involved in cellular telephone communication or modern airport and other types of radio communication. Maximum interference levels are not specified as design criteria for modern transmission lines because the level of the AM interference in any given case would depend on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration, and weather conditions. The level of any such AM interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas. The Federal Communications Commission (FCC) requires the line's owner to mitigate such interference in any specific case.

Reflectivity

Reflectivity refers to light reflected off of surfaces that could cause a brief episode of a loss of vision (also known as flash blindness) on pilots or air traffic controllers. Potential impacts of reflectivity include glint and glare. The term *glint* refers to a momentary flash of bright light; by comparison, *glare* is a continuous source of bright light. Flash blindness is defined in FAA Order 7400.2f as "a temporary visual interference effect that persists after the source of illumination has ceased." For facilities placed in the desert, far from most ground-based receptors, potential impacts would be limited to aircraft passing overhead (FAA, 2010a).

The amount of light reflected off of a solar panel surface depends on the amount of sunlight hitting the surface as well as the surface reflectivity. The amount of sunlight interacting with the solar panel will vary based on geographic location, time of year, cloud cover, and solar panel orientation. Frequently, 1,000 watts per square meter (W/m2) is used in calculations as an estimate of the solar energy interacting with a panel. According to researchers at Sandia National Lab, flash blindness for a period of 4-12 seconds (i.e., time to recovery of vision) occurs when 7-11 W/m2 (or 650-1,100 lumens/m2) reaches the eye (FAA, 2010a).

Reflectivity from solar projects varies depending on the type of solar technology, its materials and design. Concentrated solar power systems such as the project use mirrors to maximize reflection and focus the reflected sunlight and associated heat on a design point to produce steam that generates electricity. Concentrated solar power systems tend to be highly reflective: the percent of sunlight reflected is about 90 percent, translating to 900 W/m2 reflected (FAA, 2010a).

The character of reflected light, i.e., whether it is "specular" or "diffuse," also is important in evaluating reflectivity. Specular reflection occurs when the surface in question is smooth and polished; it results in a more concentrated type of light. Diffuse reflection occurs from rough surfaces such as pavement or vegetation; it produces a less concentrated light. Flash blindness generally occurs only from specular reflections.

Distance between a solar field and potential reflectivity receptors also factors into an analysis of potential impacts, because the intensity of the light reflected from the solar panel decreases as the distance from it increases. The distance necessary to avoid flash blindness is directly proportional to the size of the array in question (FAA, 2010a).

Accordingly, under certain circumstances, reflected light and glare could affect the vision of pilots flying within view of the proposed solar field.

Industrial Thermal Plumes

In January 2006, the FAA conducted a Safety Risk Analysis (SRA) of industrial plumes (FAA, 2006). Based on this analysis, the FAA concluded that turbulence associated with thermal plumes could result in the following:

1. Possible airframe damage or negative effects on aircraft stability in flight or both;
2. Adverse effects on aircraft due to high levels of water vapor, engine and aircraft contaminants, icing, and restricted visibilities; and
3. Loss of the aircraft or fatal injury to the crew as well as substantial damage to ground facilities.

As a result, the FAA recommended that FAA Order JO 7400.2 be amended to consider a plume-generating facility as a hazard to navigation when expected flight paths pass less than 1,000 feet above the top of the object. In addition, the FAA included in its 2006 Safety Risk Analysis three other recommendations concerning plumes:

1. Amend the Aeronautical Information Manual (AIM), Chapter 7, Section 5, with wording that overflights at less than 1,000 feet vertically above plume-generating industrial sites should be avoided;
2. Where operationally feasible, make permanent the temporary flight restriction (TFR) that pertains to the overflight of power plants; and
3. Amend Advisory Circular 70/7460-2K, *Proposed Construction of Objects that May Affect Navigable Airspace,*[1] by changing Instructions to completing FAA Form 7460-1, *Notice of Proposed Construction or Alternation,* Item #21 by adding “For structures such as power plants or any industrial facility where exhaust plume discharge could reasonably be expected and reportable under the provisions of Part 77, thoroughly explain the nature of the discharge.”

According to the FAA, these actions would serve to further enhance aviation safety within the National Airspace System.

In the FAA Solar Guide, the FAA explains that thermal plume-related hazards vary depending on the solar technology employed. While conventional solar thermal and photovoltaic solar energy systems can be used reliably and safely even on airport property, concentrated solar power systems with dry cooling systems can produce upward moving air columns into navigable airspace that raise concerns about hazards to safe air navigation (FAA, 2010a). A research paper prepared by the Airport Cooperative Research Program (ACRP) notes that for one “power tower” project, the CEC determined that the effects of thermal turbulence could be a hazard to aircraft up to 1,350 feet above ground level (ACRP, 2011).

[1] The FAA has cancelled this Advisory Circular.

3.12.4 Traffic and Transportation Safety

The construction of the two 750-foot towers that are part of the PSEGS could affect traffic and transportation safety. The relevant supplemental setting information is discussed in Section 3.12.3 above. The remaining transportation setting information from PSPP PA/FEIS Section 3.12.7 (p. 3.12-7 et seq.) does not require supplement.

3.12.5 Geologic Hazards

As noted in Section 3.8, Mineral Resources, the PSEGS is proposed for the same geologic setting as was analyzed in the PSPP PA/FEIS. Thus, the analysis of potential geologic hazards in PSPP PA/FEIS Section 3.12.9 (p. 3.12-9) does not require supplement.

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3.13 Recreation

Section 3.13 of the PSPP PA/FEIS describes public lands suitable for recreational opportunities generally occurring within 20 miles of the PSPP site. The document further describes the planning context for recreation on BLM lands, including the CDCA and NECO Plans, and the allowable uses within the site's Multiple Use Class-M (Moderate Use; MUC-M) designation. More generally, the PSPP PA/FEIS describes regional recreational uses and opportunities, including those available within the Palo Verde and Coachella valleys; and federally managed lands providing recreational opportunities, such as national parks, designated wilderness areas, areas of critical environmental concern (ACECs), campgrounds and long-term visitor areas (LTVAs). As the PSEGS would occur in the same general location as that of the PSPP, much of the description of such lands and opportunities remains valid. However, changes to project configuration, namely the addition of the two proposed power towers, necessitate consideration of views of the site from areas beyond 20 miles. As the affected environment for visual resources describes more fully in Section 3.18, the towers would be visible from areas up to approximately 30 miles from the site. In addition to those federally managed recreational lands described in the PSPP PA/FEIS, there are five additional special designated areas within this expanded study area that were not previously identified, including one ACEC which is in the viewshed of PSEGS. Therefore, this section of the Draft SEIS provides supplemental information regarding changes to previously described recreational lands and opportunities, and identifies the additional special designated areas located beyond the original recreational lands study area.

3.13.1 On-Site Recreation Uses

Section 3.13.1 of PSPP PA/FEIS describes the allowable recreational uses of the PSEGS site. The primary activities observed on the site include OHV touring and sightseeing, photography, rockhounding, hiking and hunting. It further states there are no recreational facilities or specific recreation attractions on the sites and that visitor use is assumed to be very low due to the limited availability of recreation opportunities in the immediate surrounding areas. As the PSEGS would occur on the same general location as that of PSPP, the discussion of on-site recreation uses remains valid.

3.13.2 Regional Recreation Areas and Opportunities

Regionally, the Palo Verde Valley, which is 38 miles to the east of the site and the Coachella Valley and 60 miles to the west, offers myriad outdoor recreational opportunities for boating, water skiing, jet skiing, swimming, fishing, canoeing, camping, rock hounding, hiking, archery, hunting, horseback riding, trapping, trap and skeet shooting, and OHV use. Section 3.13.2 of the PSPP PA/FEIS provides a thorough discussion of the public and private recreation facilities and opportunities in the cities of Blythe and Indio, California.

The unincorporated community of Desert Center is the closest community to the site, located approximately 10 miles to the west. There are no community parks in Desert Center, and no regional parks or open space areas or state parks in the Chuckwalla Valley. Lake Tamarisk Desert

Resort, located 2 miles north of Desert Center, is a member-owned community for seniors and provides the only local recreational amenities in the Desert Center area. It offers 150 mobile homes spaces, mobile home rentals, access to OHV areas, a campground, overnight RV camping, golf course, heated pool, and club house (Lake Tamarisk Desert Resort, 2013a, 2013b).

There are no community parks in Desert Center, and no regional parks or state parks within a 30-mile radius of the PSEGS site.

The remainder of developed recreation sites and dispersed areas utilized for recreation activities within the expanded 30 mile Visual Impact Threshold Distance (See Figure 3.19-3) are managed by BLM and NPS. Tables 3.13-1 and 3.13-3 in Section 3.12.2 of the PSPP PA/FEIS provided details about these areas. The following paragraphs summarize this information.

The BLM administers wilderness areas, campgrounds (including LTVAs), trails, interpretive sites, and an extensive network of backcountry approved travel and OHV routes in the vicinity of the site. ACECs also provide dispersed recreation opportunities in the region. Overall, recreation use on BLM lands in the California Desert generally is limited to the cooler months of September through May, with little use in the summer. Popular recreation activities include car and RV camping, OHV riding and touring, hiking, photography, hunting (e.g., dove, quail, and deer), sightseeing, and visiting cultural sites. Outside of fee collection sites, the BLM has no accurate estimates of visitor use; however, staff observations and Law Enforcement Ranger patrols indicate the area described in this section received approximately 2,000 to 3,000 visitors per year.

BLM camping facilities include Corn Springs Campground (6.5 miles southwest), Mule Mountain LTVA (25 miles east), and Midland LTVA (36 miles east). Wiley Well and Coon Hollow Campgrounds are components of Mule Mountain LTVA. Campgrounds limit visitors to a 14-day stay limit, while LTVAs allow long-term camping within the system of seven LTVAs within Arizona and California. Camping in undeveloped areas on BLM-administered lands also is limited to 14 days in any 30-day period.

BLM ACECs, while not designated for the recreational use, usually provide interpretive signage to inform visitors of the special values of the areas and associated protection measures. These ACECs are Chuckwalla Desert Wildlife Management Area (DWMA) (0.25 mile southwest), Palen Dry Lakes (0.5 mile northeast), Corn Springs (4.5 miles southwest), Alligator Rock (5.0 miles west), Desert Lily Preserve (5.0 miles northwest), and Chuckwalla Valley Dune Thicket (15.5 miles southeast).

In addition to the ACECs described in Section 3.13.2 of the PSPP PA/FEIS, the 4,092-acre Mule Mountains ACEC, located approximately 21 miles southeast of the site, would be within the viewshed of the PSEGS. This ACEC bears dual MUC designations, M and L, and was established to manage prehistoric resources. Like other ACECs in the vicinity, the Mule Mountains ACEC does not have recreation use facilities, but has signage to inform visitors of the special values of the areas and associated protection measures. The BLM has no visitor counts for these sites, but observations and patrols indicate very low use, in the hundreds per year.

Also now included in the expanded Study Area and in the viewshed of the PSEGS is a small segment of the Bradshaw Trail National Back Country Byway, as it passes over the Mule Mountains. While discussed as a recreation resource in the PSPP PA/FEIS, no part of the 70-mile route would be within the viewshed of PSPP. See Section 4.18, *Impacts on Visual Resources* for additional details.

The PSEGS would be within the viewshed of several BLM-managed wilderness areas, including Palen-McCoy (1.25 mile northeast), Chuckwalla Mountains, and Little Chuckwalla Mountains (14 miles southeast). Also included in the expanded 30-mile Visual Impact Threshold Distance (See Figure 3.19-3) are four additional BLM-managed wilderness areas: Ornocopia Mountains, Palo Verde Mountains, Rice Valley, and Sheephole Valley; however, the PSEGS would not actually be visible from these wilderness areas and are not discussed further.

In addition to these BLM managed areas, the National Park Service administers the Joshua Tree National Park, the southeast end of which is located approximately 7.5 miles northwest of the PSEGS site. Joshua Tree National Park contains over 800,000 acres of land and is used for hiking, mountain biking and rock climbing, and camping. Joshua Tree Wilderness is designated in the portion of the Park closest to the PSEGS. Other recreational opportunities within the Park include wildflower viewing and birdwatching (NPS, 2013a, 2013b). The Park is open year-round, with peak visitation occurring in April. There were approximately 1.4 million recreational visits to the Park in 2012 (NPS, 2013c). No additional NPS units would be within the expanded Study Area for recreation.

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3.14 Social and Economic Setting

Section 3.14 of the PSPP PA/FEIS describes the existing social and economic conditions in the PSPP ROW application area, which, for purposes of socioeconomic analysis, is essentially the same as that of the PSEGS. The PSPP PA/FEIS also summarizes applicable plans, policies, and regulations that represent the social aspirations, community characteristics, and desired lifestyle, values, and goals of the local stakeholders. These include the Riverside County General Plan, Desert Center Area Plan, Blythe General Plan and Redevelopment Implementation Plan, and the Coachella General Plan and Indio General Plan. The PSEGS is not subject to these local and regional plans and policies; they are provided for informational purposes only. Because these documents have not changed since publication of the PSPP PA/FEIS, no supplementation is required here. The regional socioeconomic analysis covered in the PSPP PA/FEIS includes communities within a 2-hour commute of the PSPP site. The local analysis covers the major communities located within a 1-hour commute, which includes: the City of Blythe (approximately 40 miles east of the site); the community of Desert Center; the City of Ehrenburg, Arizona (approximately 45 miles east of the site); and the Town of Quartzsite, Arizona (approximately 57 miles east of the site). Population, housing, and economics statistics have not changed substantially since publication of the PSPP PA/FEIS. To the extent that more current data are available, they are presented here.

3.14.1 Social Conditions

Social conditions are the same as described in PSPP PA/FEIS Section 3.14.1, with the potential exception of affected parties' attitudes toward the PSEGS. It is expected that the attitudes of environmental groups, recreational users, and local private landowners and residents toward the solar power technology proposed for the PSEGS may differ from attitudes toward other solar technologies, including the solar thermal trough technology proposed for the PSPP, particularly with respect to differences in impacts to biological and cultural resources as well as to visual and other considerations as described throughout this document.

3.14.2 Economic

Employment by Industry Group

Employment statistics by industry sector and county for 2011 are summarized in Table 3.14-1. Government is Riverside County's largest employment sector, accounting for over 20 percent of the total jobs in the County. Additional important industries in the area construction, manufacturing, retail trade, and services (e.g., professional, business, educational, health, and hospitality). San Bernardino County has an industry employment profile similar to Riverside County, and in La Paz County, key employment sectors include mining and logging, government, and retail trade.

Labor Force and Unemployment

Table 3.14-2 presents the labor force, unemployed workers, and unemployment rates of the study area counties from 2007 to 2012 (the last year of data currently available). In 2012, Riverside

TABLE 3.14-1
EMPLOYMENT BY INDUSTRY GROUP – 2011

NAICS Code	Industry Group	Riverside County		San Bernardino County		La Paz County	
		Persons	Percent of Total	Persons	Percent of Total	Persons	Percent of Total
11-000000	Total Farm	12,800	2.33	2,100	0.35	241	3.23
10-000000	Mining and Logging	400	0.07	600	0.10	771	10.33
20-000000	Construction	34,300	6.25	24,500	4.11	190	2.55
30-000000	Manufacturing	39,000	7.11	46,800	7.85	203	2.72
41-000000	Wholesale Trade	19,900	3.63	29,500	4.95	91	1.22
42-000000	Retail Trade	79,400	14.47	77,800	13.06	1,198	16.05
43-000000	Transportation, Warehousing & Utilities	20,300	3.70	48,200	8.09	-- [a]	--
50-000000	Information	9,600	1.75	5,300	0.89	54	0.72
55-000000	Financial Activities	18,300	3.33	20,900	3.51	443	5.94
60-000000	Professional & Business Services	52,700	9.60	73,400	12.32	489	6.55
65-000000	Educational & Health Services	61,600	11.22	76,300	12.81	372	4.98
70-000000	Leisure & Hospitality	69,300	12.63	55,000	9.23	-- [a]	--
80-000000	Other Services	19,000	3.46	20,300	3.41	-- [a]	--
90-000000	Government	112,200	20.44	115,100	19.32	2,298	30.79
	Total	**548,800**	**100**	**595,800**	**100**	**7,463**	**100**

NOTE:
[a] BEA does not provide these numbers to avoid disclosure of confidential information, but the estimates for these items are included in the total.

SOURCE: California EDD, 2013b, 2013c; Bureau of Economic Analysis, 2012.

TABLE 3.14-2
LABOR FORCE AND UNEMPLOYMENT IN THE STUDY AREA

	2007	2008	2009	2010	2011	2012
Riverside-San Bernardino-Ontario, CA MSA						
Labor force	1,766,900	1,776,400	1,775,700	1,799,900	1,795,000	1,805,400
Employed	1,664,000	1,629,800	1,541,900	1,541,700	1,551,500	1,586,800
Unemployed	102,900	146,600	233,800	258,200	243,500	218,600
Unemployment rate	5.8%	8.3%	13.2%	14.3%	13.6%	12.1%
Riverside County, CA						
Labor force	903,400	912,900	917,000	938,400	939,600	944,500
Employed	849,900	835,200	794,300	802,300	810,400	828,800
Unemployed	54,500	77,800	122,700	136,200	129,200	115,600
Unemployment rate	6.0%	8.5%	13.4%	14.5%	13.7%	12.2%
La Paz County, AZ						
Labor force	7,590	7,529	7,700	7,668	7,519	7,687
Employed	7,215	6,965	6,947	6,858	6,763	6,982
Unemployed	375	564	753	810	756	705
Unemployment rate	4.9%	7.5%	9.8%	10.6%	10.1%	9.2%

SOURCE: EDD, 2013d, 2013e; Arizona Department of Administration, 2013

County had a labor force of 944,500 workers, with an unemployment rate of 12.2 percent, which was higher than the statewide unemployment rate of 10.5 percent in 2012 (EDD, 2013a), but lower than the County unemployment rates from 2009 to 2011, showing an increase in employment since the recession. The San Bernardino-Riverside-Ontario Metropolitan Statistical Area (MSA), which includes both Riverside and San Bernardino counties, has a similar current and historic unemployment rate to that of Riverside County alone.

In Arizona, La Paz County had an estimated average labor force of 7,687 workers in 2012, with unemployment at 9.2 percent, giving an unemployed labor force of just 705 workers.

Labor Force Growth Projections

Table 3.14-3 presents labor force estimates and projections in the San Bernardino-Riverside-Ontario MSA for those skilled workers (by craft) required for construction and operation of the PSEGS as estimated by the Applicant. The California Employment Development Department (EDD) does not provide County-specific projections. Employment figures for 2010 are provided, as well as employment projections for the selected occupations for 2020. As of 2010, there were moderately high numbers of skilled workers in Riverside and San Bernardino Counties, including metal workers (13,530), carpenters (10,140), and construction laborers (11,870).

Relevant specialized positions generally were fewer in number, including paving, surfacing, and tamping equipment operators, power plant operators, and construction trade helpers. Employment figures for all occupations presented are anticipated to increase by 2020. The two occupations with the largest anticipated future job growth by 2020 are construction laborers (1,510 new jobs) and metal workers and plastic workers (1,610 new jobs). The highest rate of job growth by occupation in Riverside and San Bernardino Counties is paving, surface, and tamping equipment operators (22.5 percent) (EDD, 2012).

No County-level employment projections for La Paz County are available. Given the small size of the available Arizona labor force within the regional study area, any future growth to the La Paz labor force would have a very minor change in future employment for construction occupations.

3.14.3 Fiscal Resources

A summary of Riverside County's expenses and revenues for the 2010-2011 fiscal year is provided in Table 3.14-4. As the PSEGS would be constructed in Riverside County, the County would be the local agency with taxing power and could be expected to receive the majority of the direct impacts from the project in the form of additional expenses or revenues (from business and sales taxes, permits, and other sources).

For the fiscal year 2010-2011, revenues for Riverside County totaled approximately $2.6 billion, and expenditures totaled $2.7 billion. Riverside's key expenditures were on public protection, public assistance, and health. Its primary revenue sources were other government agencies, property taxes, and charges for County-provided services.

TABLE 3.14-3
LOCAL LABOR POOL BY CRAFT – RIVERSIDE AND SAN BERNARDINO COUNTIES

Occupational Title	Annual Average Employment		Employment Change		Average Annual Job Openings		
	2010	2020	Number	Percent	New Jobs	Net Replacements	Total
Construction							
Construction Managers	5,000	5,490	490	9.8	49	32	81
Carpenters	10,140	10,450	310	3.1	30	215	245
Cement Masons and Concrete Finishers	2,420	2,570	150	6.2	15	38	53
Construction Laborers	11,870	13,380	1,510	12.7	151	95	246
Paving, Surfacing, and Tamping Equipment Operators	400	490	90	22.5	8	8	16
Operating Engineers and Other Construction Equipment Operators	2,510	3,030	520	20.7	52	58	110
Electricians	4,000	4,520	520	13.0	52	108	160
Plumbers, Pipefitters, and Steamfitters	3,160	3,570	410	13.0	41	91	132
Metal Workers and Plastic Workers	13,530	15,140	1,610	11.9	166	255	421
Helpers – Construction Trades	2,000	2,280	280	14.0	34	53	87
Welders, Cutters, Solderers, and Brazers	2,650	3,090	440	16.6	44	71	115
Architects, Surveyors, and Cartographers	1,070	1,280	210	19.6	20	23	43
Engineering Managers	1,180	1,340	160	13.6	16	23	39
Supervisors of Construction and Extraction Workers	4,540	5,240	700	15.4	70	105	175
Machinists	2,440	2,830	390	16.0	40	45	85
Structural Iron and Steel Workers	700	670	-30	-4.3	0	14	14
Construction Total	**67,610**	**75,370**	**7,760**	**11.5**	**788**	**1,234**	**2,022**
Operation							
Plant and System Operators	1,770	1,910	140	7.9	15	50	65
Maintenance and Repair Workers, General	9,140	10,360	1,220	13.3	123	168	291
Operation Total	10,910	12,270	1,360	12.5	138	218	**356**

SOURCE: EDD, 2012.

TABLE 3.14-4
RIVERSIDE COUNTY EXPENSES AND REVENUES FOR FY 2010-2011

	Amount (Dollars)	Percent of Total
Expenses (Total)	2,662,570,257	100
General Government	182,365,482	6.8
Public Protection	1,040,282,249	39.1
Public Ways and Facilities	166,639,057	6.3
Health	350,804,051	13.2
Public Assistance	811,224,131	30.5
Education	19,605,628	0.7
Recreation & Cultural Services	411,911	0.0
Debt Service	86,292,475	3.2
Transfers Out	4,945,273	0.2
Revenue Sources (Total)	2,593,155,749	100
Property Taxes	419,297,189	16.2
Other Taxes	46,694,507	1.8
Licenses, Permits, Franchises	28,491,140	1.1
Fines, Forfeitures and Penalties	96,079,643	3.7
From Use of Money and Property	20,989,701	0.8
From Other Governmental Agencies	1,508,962,163	58.2
Charges for Current Services	426,952,421	16.5
Miscellaneous Revenue	24,775,902	1.0
Other Financing Sources	7,311,330	0.3
Transfers In	13,601,753	0.5

SOURCE: California State Controller's Office, 2012.

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3.15 Soils Resources

Section 3.15 of the PSPP PA/FEIS describes soil resources in the PSPP ROW application area, including an overview of regional topography, geology, climate, and weather. At the time of PSPP PA/FEIS publication, Natural Resources Conservation Service (NRCS) soil mapping at the site was underway but not complete, which is still the case at the time of publication of this Draft SEIS. Consequently, the regional soils data available in the United States General Soil Map and the 2010 field observations used to characterize baseline soils information in the PSPP PA/FEIS remain the best available sources. Therefore, this document summarizes but does not supplement the PSPP PA/FEIS soil resources setting.

3.15.1 Representative Soil Types

As described in the PSPP PA/FEIS, the representative soil types at the Project site are the Rositas–Dune land–Carsitas unit and the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni unit (Figure 3.15-1, PSPP PA/FEIS, p. A-13). The new gen-tie route and the natural gas line associated with the PSEGS fall within the Valva- Quilotosa-Hyder-Cipriano-Cherioni unit. Rositas-Dune land-Carsitas soils occur on 54 percent of the site and are characterized by soils with a very high sand percentage (greater than 95 percent) and a high susceptibility to wind erosion. The remaining 46 percent of the site contains Vaiva-Quilotosa-Hyder-Cipriano-Cherioni soils, which are characterized by soils with high percentage (greater than 65 percent) of sand and a moderate susceptibility to wind erosion.

3.15.2 Sand Migration and Dunes

The PSEGS site is located within the Chuckwalla Valley, a region of active aeolian (wind-blown) sand migration and deposition. Active aeolian sand migration occurs in migration corridors in the northeastern section of the project site and to the northeast of the site. Aeolian processes play a major role in the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley and those within the PSEGS area, which covers several different land units (Figure 3.15-2, PSPP PA/FEIS, p. A-14) including (from southwest to northeast) a currently stable coarse gravel alluvial fan surface with some relict sand dunes that have largely deflated (blown away), a more active wind-blown sand area with relatively shallow sand deposits, and an area of deeper and more active vegetated sand dunes that is Mojave Fringe Toed Lizard (MFTL) habitat (see Section 3.23 and Section 4.21 regarding MFTL). The PSEGS area lies within the Palen-Ford sand migration corridor. Nearly half of the project disturbance area would be located in stabilized and partially stabilized sand dunes, wash habitat, and other areas with soils characteristic of active aeolian sand migration and deposition.

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3.16 Special Designations

Section 3.16 of the PSPP PA/FEIS describes lands with special designations in the vicinity of the PSPP site and within its viewshed. These fall into two primary categories. The first consists of lands within the BLM-managed *National System of Public Lands*, including designated wilderness areas, lands with wilderness characteristics, areas of critical environmental concern (ACECs), and back country byways. The second consists of lands within the National Park Service-managed *National Park System*, which, for the PSPP site, includes Joshua Tree National Park and the Joshua Tree Wilderness. Because the PSEGS would be located on primarily the same lands as the PSPP, and because the viewshed of the PSEGS encompasses all of the PSPP, these descriptions remain relevant to the PSEGS Since publication of the PSPP PA/FEIS, no changes have been made to the existing lands with special designations.

As described more fully in Section 3.19, *Visual Resources*, the PSEGS viewshed would encompass a larger area than that of the PSPP (see Figure 3.19-3). In addition to the six ACECs previously described, the Mule Mountains ACEC also would be within the PSEGS viewshed. The 4,092-acre Mule Mountains ACEC is located approximately 21 miles southeast of the site. This ACEC bears dual MUC designations, M and L, and was established to manage prehistoric resources.

Also included in the 30-mile visual impact threshold distance are portions of four additional BLM-managed wilderness areas. They are: Ornocopia Mountains, Palo Verde Mountains, Rice Valley¸ and Sheephole Valley Wilderness Areas. Although within the 30-mile distance, none of these are within the PSEGS viewshed, and so they are not discussed further.

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3.17 Transportation and Public Access – Off Highway Vehicle Resources

Section 3.17 of the PSPP PA/FEIS describes on- and off-road transportation and public access regulations, routes, and conditions in the general PSPP vicinity. The PSPP PA/FEIS describes the laws, regulations, and planning documents governing BLM lands access and transportation management, including the CDCA Plan, Executive Orders 11644 (1972) and 11989 (1974), the FLPMA, and the BLM planning regulations (43 CFR §1600) and Planning Handbook H-1601-1. More specifically, the document describes the application of these laws, policies, and plans to off highway vehicle (OHV) use on BLM lands in the project vicinity. Major access routes (i.e., U.S. I-10, Corn Springs Road, and Chuckwalla Valley Road) and public transportation options (i.e., rail, bus, and bicycle) also are discussed. With the exception of the below revisions which update area traffic volumes, the information presented in Section 3.17 of the PSPP PA/FEIS remains valid and applicable to the PSEGS.

3.17.1 Transportation

Existing Traffic Volumes

The level of service (LOS) is defined as a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS indicators for the highway and roadway system are based on specific characteristics of traffic flow on designated sections of roadway during a typical day. For mainline freeway and road segments, these include overall traffic volume, speed, and density.

Several physical and operational characteristics of the roadway, such as lane configuration, flow speed (typical speed between intersections), and number of intersections per mile, are used to determine the vehicular capacity of the roadway segment. When these two sets of data are compared, a volume-to-capacity ratio is calculated. These factors are then converted to a letter grade identifying operating conditions and expressed as LOS A through F. The *Highway Capacity Manual 2000*[1], published by the Transportation Research Board, Committee on Highway Capacity and Quality of Service, includes six levels of service for roadways or intersections ranging from LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability)—the best operating conditions—to LOS F (forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions)—the worst.

1 This manual is a common guide used for computing the capacity and quality of service of various highway facilities, including highways, arterial roads, signalized and unsignalized intersections and the effects of mass transit, pedestrians, and bicycles on the performance of these systems.

Table 3.17-1 provides existing traffic volumes and LOS for I-10 that likely would be used for indirect access to the PSEGS site. As indicated below, I-10 currently operates at LOS A, and Corn Springs Road operates at LOS A in the PSEGS area.

TABLE 3.17-1
EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

	Existing Conditions			
Roadway/Segment	**Travel Lanes**	**Volume**	**Capacity[a]**	**LOS**
I-10 West of Project Site	4	2,650	8,000	A
I-10 East of Project Site	4	2,650	8,000	A
Corn Springs Road	2	Negligible		A

NOTE:
[a] Capacity represents approximate two-way capacity in vehicles per hour.
Volume represents the number of vehicles crossing a section of road per unit time at any selected period.

SOURCES: Caltrans, 2012; ESA, 2013.

3.18 Vegetation Resources

Section 3.18 of the PSPP PA/FEIS describes the vegetation resources that occur within the PSPP Biological Resources Study Area (BRSA). The 14,771 acre BRSA encompasses the approximately 3,898.96 acre Project Disturbance Area (including the transmission and natural gas pipeline disturbance area) and a surrounding buffer area. The section examines the presence and distribution of natural vegetation communities, as well as the occurrence of special-status plants and jurisdictional waters in the BRSA. A discussion of invasive noxious weeds also is presented.

Most of the PSEGS would occur within the PSPP Project Disturbance Area described in the PSPP PA/FEIS and, as a result, there is considerable overlap in the BRSAs of the two projects. Accordingly, the PSPP PA/FEIS descriptions of regional climate and vegetation resources are valid and relevant for the PSEGS. The PSPP BRSA encompassed a 14,771 acre area for which vegetation resources were described in PSPP PA/FEIS Section 3.18. For these resources, unless otherwise specified, no additional discussion is provided here. Rather, this section supplements PSPP PA/FEIS Section 3.18 to reflect vegetative resource considerations that may have changed with PSEGS configurations, rerouting of the gen-tie line, and addition of the natural gas line. This section also includes revisions stemming from more current information regarding the types and distributions of those resources described in the PSPP PA/FEIS that also would occur within the PSEGS BRSA.

The PSEGS site is almost entirely within the area analyzed in the PSPP PA/FEIS. In addition, the gen-tie line corridor for the two projects is the same for most of its length and the site access road is identical. With respect to development beyond the previously analyzed area, the PSEGS differs in two regards from the PSPP: (1) the gen-tie line route extends to the west by approximately 1.3 miles, resulting in an associated 18.9-acre new disturbance area; and (2) a natural gas line extension and distribution yard are proposed to the south, resulting in an associated 3.53-acre disturbance area. The PSEGS gen-tie line route was surveyed on March 30, 2013 (Karl, 2013a); the area also has been surveyed in past years for the Desert Sunlight Project and the Eagle Mountain Pumped Storage Project (PSEGS PTA, 2012; page 5.1-1). Spring season rare plant surveys were performed for the natural gas line corridor and distribution yard on March 30, 2013; the findings are incorporated into this Draft SEIS. Vegetation communities were not described for the new disturbance areas, so vegetation communities have been determined using aerial imagery.

3.18.1 Overview of Natural Vegetation Communities

Vegetation communities described in the PSPP PA/FEIS are the same as vegetation communities present within the PSEGS BRSA. Vegetation communities in the PSEGS area are characterized in PSPP PA/FEIS Section 3.18.1 (p. 3.18-2). No new communities have been identified in the gen-tie line reroute, redundant telecommunication line to be installed within the gen-tie line corridor, natural gas line corridor or secondary access road to be installed in the natural gas line corridor (Karl, 2013a). Table 3.18-1 summarizes the area associated with each vegetation community within the PSEGS BRSA.

TABLE 3.18-1
NATURAL COMMUNITIES/COVER TYPES

Natural Communities and Cover Types in the PSEGS Vicinity[a]	Disturbance Area	One Mile Buffer Area	Resources Study Area
Ephemeral Drainages "Riparian"			
Desert dry wash woodland	206.4	639.6	846
Unvegetated ephemeral dry wash	168.16	56.84	225
Total Ephemeral Drainages "Riparian"	***374.56***	***696***	***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	3,335.16	7,510	10,845
Stabilized and partially stabilized desert dunes (permitted)	186.90	723	910
Total Upland	***3522.06***	***9195.94***	***12,718***
Other Cover Types			
Agricultural Land	0	833	833
Developed	2.34	146.66	149
Total Other Cover Types	***2.34***	***979.66***	***982***
Total Acres	**3,898.96**	**10,872**	**14,771**

[a] The Project Disturbance Area encompasses the disturbance resulting from the proposed construction of the PSEGS, including solar fields, transmission facilities, office and maintenance buildings, lay down area, leach fields, and other components. It includes the impact acreage of the gen-tie line and the natural gas line corridor and switch yard (3.53 acres).

SOURCE: Karl, 2013b.

The 3,898.96-acre area that would be disturbed to construct, operate and maintain the PSEGS consists almost entirely of native habitats, including 206.4 acres of desert dry wash woodland, 168.16 acres of unvegetated ephemeral dry wash, 186.9 acres of stabilized and partially stabilized desert dunes (Palen Solar III, 2013), and 3,335.16 acres of Sonoran creosote bush scrub.

3.18.2 Ephemeral Drainages "Riparian" Communities

Desert Dry Wash Woodland

Desert dry wash woodland (also known as microphyll woodland) is a sensitive vegetation community recognized by the California Natural Diversity Database (CNDDB) and the BLM. As described in supporting documentation for the PSPP PA/FEIS (BLM, 2011; BLM, 2002), CDFW designates the desert dry wash woodland habitat as State waters. This vegetation community occupies the major washes that traverse the Project Disturbance Area for the PSEGS and supports groundwater-dependent desert phreatophytes.[1] Desert dry wash woodland is prevalent in the

1 A deep-rooted plant that obtains water from a permanent ground supply or from the water table.

primary wash near I-10 where channel development is most pronounced and water supply more abundant. The natural gas line corridor, distribution yard, and revised gen-tie corridor are located within this primary wash accounting for 7.44 acres of desert dry wash woodland vegetation community.

Unvegetated Ephemeral Dry Wash

Within the PSEGS BRSA, unvegetated ephemeral dry wash habitat includes smaller channels without a continuous cover of desert dry wash woodland and a sparse to intermittent cover of shrubs and perennial herbs. These habitats are recognized and regulated as State waters and termed "Unvegetated Ephemeral Dry Wash."

3.18.3 Upland Communities

Active Desert Dunes

No active desert dunes occur within the Project Disturbance Area. Active desert dunes are considered sensitive by the BLM (see, e.g., the NECO Plan) and by the CNDDB (PSPP PA/FEIS, p. 3.18-4). Active desert dunes occur in the northeastern portion of the PSEGS BRSA and northeast of Palen Dry Lake, only in the buffer area within the most active part of the wind transport corridor as described in the PSPP PA/FEIS. The acreage of active desert dunes has not changed since publication of the PSPP PA/FEIS.

Dry Lake Bed (Playa)

This community does not occur in the PSEGS BRSA. The northeastern portion of the PSPP BRSA lies within Palen Dry Lake and was described in the PSPP PA/FEIS (p. 3.18-5).

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub habitat characterizes most of the PSPP BRSA and was described in the PSPP PA/FEIS (p. 3.18-5). Under the PSEGS, the acreage of Sonoran creosote bush scrub within the Project Disturbance Area would decrease by 86.42 acres (Table 3.18-1).

Stabilized and Partially Stabilized Desert Dunes

Stabilized and partially stabilized desert dunes occupy the margins of Palen Dry Lake and extend as a few discrete patches within the northern and eastern portion of the Project Disturbance Area. Based on review of the aerial photos and mapping provided in the Preliminary Geomorphic Aeolian and Ancient Lake Shoreline Report prepared in support of the PSPP (PSPP PA/FEIS, p. 3.18-6) the mapping of the stabilized and partially stabilized desert dunes in the CEC Application for Certification (AFC) of the PSPP may have under-represented the extent of this community type (PSPP PA/FEIS, p. 3.18-6). Both studies, which focus on sand transport, provide aerial photos that depict an extensive area of active sand dune building that occupies much of the northeastern portion of the Project Disturbance Area. In light of existing uncertainty about the precise number of acres of stabilized and partially stabilized desert dunes, the BLM uses the 186.9-acre figure in this Draft SEIS.

3.18.4 Other Cover Types

Areas of non-native vegetation within the PSPP BRSA include agricultural and developed areas and are limited to approximately 5 acres within the Project Disturbance Area, as described in the PSPP PA/FEIS (p. 3.18-6). The acreage of agricultural and developed areas has not changed since publication of the PSPP PA/FEIS and applies equally to the PSEGS.

Agriculture

Areas of active and fallow agricultural fields occur within the buffer of the PSPP BRSA and not within the Project Disturbance Area. The majority of the lands mapped as agriculture within the BRSA are palm tree plantations. See PSPP PA/FEIS, p. 3.18-6. Agricultural acreages in the BRSA have not changed since publication of the PSPP PA/FEIS and apply equally to the PSEGS.

Developed

Developed areas consist of roadways (I-10 and Corn Springs Road) and cleared land in the southern portion of the PSPP BRSA. See PSPP PA/FEIS, p. 3.18-7. Developed acreages in the BRSA have not changed since publication of the PSPP PA/FEIS and apply equally to the PSEGS.

3.18.5 Sensitive Natural Communities and Jurisdictional Waters

Sensitive natural communities occurring in or adjacent to the Project Disturbance Area and potentially affected by the PSEGS are as follows: desert sink scrub (off-site), active dunes (off-site), stabilized and partially stabilized dunes, desert dry wash woodland (waters of the State), unvegetated ephemeral wash (waters of the State). These communities are described in PSPP PA/FEIS Section 3.18.5 (p. 3.18-7) for the PSPP and apply equally to the PSEGS.

Groundwater-Dependent Vegetation Communities

Groundwater levels around Palen Lake are within the known rooting depths for most of the phreatophyte communities present within the zone potentially affected by the project wells, including: mesquite woodlands, alkali sink scrublands, dune communities along the margins of the playa, and ironwood-palo verde woodlands (PSPP PA/FEIS, p. 3.18-7 et seq.). Documented communities around Palen Dry Lake were also confirmed through aerial photo interpretation and other methods. The following groundwater-dependent plant communities that occur in the PSPP BRSA are sensitive communities recognized by the BLM (NECO Plan) and/or CNDDB (PSPP PA/FEIS, p. 3.18-8): honey mesquite woodlands, microphyll woodlands, alkali (desert) sink scrubs, sparsely vegetated playa lake beds; and jackass clover unique stands. Groundwater-dependent vegetation communities are described in the PSPP PA/FEIS (p. 3.18-7 et seq.).

Honey Mesquite Bosques

Shrubby “bosques” (groves) of honey mesquite occur around the open, unvegetated playa along the northwest and southwest margins of Palen Dry Lake on small coppice dunes. The area of honey mesquite bosque has not changed in the Project Disturbance Area since publication of the PSPP PA/FEIS and applies equally to the PSEGS.

Microphyll Woodlands

Most of the microphyllus woodlands occur along the many desert washes in the Project Disturbance Area. The best examples are described above under “Desert Dry Wash Woodland.” Under the PSEGS, the acreage of Desert Dry Wash Woodland in the Project Disturbance Area would increase from 148 acres to 206.4 acres relative to the PSPP as proposed. The increase partly is attributable to the modified gen-tie line and new natural gas line extension.

Alkali sink scrubs

Other known phreatophytes form pure stands over large areas around the playa margins, occurring in the northern portion of the BRSA and around Palen Dry Lake. Alkali sink scrubs were described in the PSPP PA/FEIS (p. 3.18-9). Acreages have not changed since publication of the PSPP PA/FEIS and apply equally to the PSEGS.

Special Status Plants

Special-status plant species have been afforded special recognition by federal, state, or local resource agencies or organizations. Listed and special-status species have relatively limited distributions and typically require unique habitat conditions. Since publication of the PSPP PA/FEIS, CDFW and the California Native Plant Society (CNPS) have transitioned from a CNPS List designation to a California Rare Plant Rank (CRPR) ranking system, and have expanded the definition of plants considered to be special-status (CDFW, 2013). Special Plant taxa are species, subspecies, or varieties that fall into one or more of the following categories:

1. Officially listed by California or the Federal Government as Endangered, Threatened, or Rare;
2. A candidate for state or federal listing as Endangered, Threatened, or Rare;
3. Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines; these taxa may indicate “None” under listing status, but note that all CNPS List 1 and 2 and some List 3 and 4 (now known as California Rare Plant Ranks1 1A, 1B, 2, 3 and 4) plants may fall under Section 15380 of CEQA.
4. A BLM, USFWS, or U.S. Forest Service Sensitive Species;
5. Taxa listed in the *California Native Plant Society’s Inventory of Rare and Endangered Plants of California*;
6. Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;

7. Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and

8. Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats).

Table 3.18-2 lists all special-status plant species that are known to occur or could potentially occur in the PSEGS BRSA (Karl, 2013a; BLM, 2011). The table has been updated to incorporate the transition to CRPR designations and is reflective of the most current listing statuses for rare plants. The table also has been updated to incorporate results from past surveys performed in support of the Desert Sunlight Project and Eagle Mountain Pumped Storage Project for an area encompassing the 18.9-acre gen-tie line proposed for the PSEGS (Karl, 2013a), and March 2013 surveys of the gen-tie line corridor as well as the natural gas line extension and distribution yard (Karl, 2013a). Special-status plant species observed during field surveys are indicated by bold-face type (Karl, 2013a; Solar Millennium, 2009; AECOM, 2010; BLM, 2011).

The special-status plants found in the PSPP BRSA during the 2009 and 2010 spring surveys, and during October 2010 fall surveys, were described in the PSPP PA/FEIS (see, e.g., p. 3.18-10 et seq.). Also described were species considered to have some potential for occurrence in the BRSA based on the presence of suitable habitat and known occurrences in the region. CRPR and Heritage Program (HP) status changes and 2013 survey results are described below for all species described in the FEIS. No new species were encountered during 2013 surveys. Additionally, no special-status plants were observed during focused 2013 surveys of the natural gas corridor, distribution yard, and revised gen-tie corridor (Karl, 2013a). Note that late-season rare plant surveys have yet to be completed in these areas.

Harwood's Milkvetch

Harwood's milkvetch has a CRPR of 2.2, meaning that is it fairly threatened in California, but more common elsewhere. Its Heritage Program (HP) Global (G) and State (S) ranks have not changed since publication of the PSPP PA/FEIS. A total of 146 Harwood's milkvetch plants were documented at multiple locations in the BRSA during the 2009 and 2010 surveys (PSPP PA/FEIS, p. 3.18-14). Seven of these occur within the Project Disturbance Area. Harwood's milkvetch was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Ribbed Cryptantha

Ribbed cryptantha has a CRPR of 4.3, meaning that it has limited distribution in California but it is not very threatened in California. Its CRPR and HP G and S ranks have not changed since publication of the PSPP PA/FEIS. As described in the PSPP PA/FEIS, a large local population of this species was found during the 2010 surveys for the PSPP (PSPP PA/FEIS, p. 3.18-15) in which the presence of this species in the Project Disturbance Area was estimated using density sub-sampling methods, and an estimate of 8,903 plants per acre was used to calculate total plant numbers. Approximately 1.4×10^7 plants on 1,593 acres of occupied ribbed cryptantha acreage

TABLE 3.18-2
SPECIAL-STATUS SPECIES KNOWN* OR POTENTIALLY OCCURRING IN THE BIOLOGICAL RESOURCES STUDY AREA

Common Name	Scientific Name	Status State/Fed/CRPR/BLM/ Global Rank/State Rank
PLANTS		
Chaparral sand verbena	*Abronia villosa var. aurita*	__/__/1B.1/BLM Sensitive_/G5T3T4/S2
Angel trumpets	*Acleisanthes longiflora*	__/__/2.3/__/G5/S1
Desert sand parsley	*Ammoselinum giganteum*	__/__/2.3/__/G2G3/SH
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2.2/__/G5/S2S3
Harwood's milkvetch	***Astragalus insularis var. harwoodii***	**__/__/2.2/__/G5T3/S2**
Coachella Valley milkvetch	*Astragalus lentiginosus var. coachellae*	__/FE/1B.2./ BLM Sensitive / G5T2/S2
California ayenia	*Ayenia compacta*	__/__/2.3/__/G4/S3
Pink fairy duster	*Calliandra eriophylla*	__/__/2.3/__/G5/S2S3
Sand evening-primrose	*Camissonia arenaria*	__/__/2.2/__/G4/S2
Crucifixion thorn	*Castela emoryi*	__/__/2.3/__/G4/S2S3
Abram's spurge	*Chamaesyce abramsiana*	__/__/2.2/__/G4/S2S3
Arizona spurge	*Chamaesyce arizonica*	__/__/2.3/__/G5/S2
Flat-seeded spurge	*Chamaesyce platysperma*	__/__/1B.2/ BLM Sensitive / G3/S1
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
Utah milkvine	*Cynanchum utahense* (*syn=Funastrum utahense*)	__/__/4.2/__/G4/S3.2
Glandular ditaxis	*Ditaxis claryana*	__/__/2.2/__/G4G5/S1
California ditaxis	***Ditaxis serrata var. californica***	**__/__/3.2/__/G5T2T3/S2**
Cottontop cactus	*Echinocactus polycephalus var. polycephalus*	__/__/ CBR /__/__/__
Harwood's Eriastrum	***Eriastrum harwoodii***	**__/__/1B.2/BLM Sensitive_/G3/S3**
California satintail	*Imperata brevifolia*	__/__/2.1__/G2/S2.1
Pink velvet mallow	*Horsfordia alata*	__/__/4.3/__/G4/S3.3
Bitter hymenoxys	*Hymenoxys odorata*	__/__/2.1/__/G5/S2
Spearleaf	*Matelea parvifolia*	__/__/2.3/__/G5/S2.2
Argus blazing star	*Mentzelia puberula*	__/__/2.2/__/G4/S2
Slender woolly-heads	*Nemacaulis denudata var. gracilis*	__/__/2.2/__/G3G4T3/S2
Lobed cherry	*Physalis lobata*	__/__/2.3/__/G5/S2
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3
Desert unicorn plant	*Proboscidea althaeifolia*	__/__/4.3/__/G5/S3.3
Orocopia sage	*Salvia greatae*	__/__/1B.3./ BLM Sensitive /G2/S2
Desert spikemoss	*Selaginella eremophila*	__/__/2.2./__/G4/S2.2
Cove's cassia	*Senna covesii*	__/__/2.2/__/G5/S2
Mesquite nest straw	*Stylocline sonorensis*	__/__/1A/__/G3G5/SX

TABLE 3.18-2 (Continued)
SPECIAL-STATUS SPECIES KNOWN* OR POTENTIALLY OCCURRING IN THE BIOLOGICAL RESOURCES STUDY AREA

Common Name	Scientific Name	Status State/Fed/CRPR/BLM/ Global Rank/State Rank
PLANTS		
Dwarf germander	*Teucrium cubense ssp. depressum*	__/__/2.2/__/G4G5T3T4/S2
Jackass clover	*Wislizenia refracta ssp. refracta*	__/__/2.2/__/G5T5/S1
Palmer's jackass clover	*Wislizenia refracta ssp. palmeri*	__/__/2.2/__/G5T2T4/S1
"Palen Lake atriplex"[a]	***Atriplex* sp. nov. J. Andre (*Atriplex canescens* ssp.)**	**__/_ / _/BLM Sensitive/__/__**

NOTES:

* Species in bolded type were found in the Biological Resources Study Area during 2010 botanical surveys

a Proposed new taxon (PSPP PA/FEIS, p. 3.18-13). BLM may consider proposed new taxa as BLM Sensitive (PSPP PA/FEIS, p. 3.18-13)

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

California Rare Plant Rank (CRPR)
CRPR 1A = Presumed extinct
CRPR 1B = Rare, threatened, or endangered in California and elsewhere
CRPR 2 = Rare, threatened, or endangered in California but more common elsewhere
CRPR 3 = Plants which need more information
CRPR 4 = Limited distribution – a watch list
CBR = Considered But Rejected
.1 = Seriously endangered in California (high degree/immediacy of threat; over 80% of occurrences threatened)
.2 = Fairly endangered in California (moderate degree/immediacy of threat; 20%-80% of occurrences threatened)
.3 = Not very endangered in California (low degree/immediacy of threats or no current threats known; <20% of occurrences threatened or no current threats known)

Bureau of Land Management
BLM Sensitive = BLM Manual §6840 defines sensitive species as"…those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats. BLM, 2001

Global Rank/State Rank
Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values
G1 = Critically Imperiled.
G2 = Imperiled.
G3 = Vulnerable.
G4 = Apparently secure. 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 = Secure. Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
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.
SX = Presumed Extirpated
SH = Possibly Extirpated
S1 = Critically Imperiled
S2 = Imperiled
S3 = Vulnerable
.1 = undefined in new classification system; under old system, this meant very threatened in California
.2 = undefined in new classification system; under old system, this meant threatened in California
.3 = undefined in new classification system; under old system, this meant no current threats known in California

SOURCE: CNPS, 2013; BLM, 2001

were estimated within the PSPP BRSA. Ribbed cryptantha was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

California Ditaxis

California ditaxis has a CRPR of 3.2, meaning that its ranking status was not resolved during its last review but occurrences in California are fairly threatened. Its HP G rank has not changed since publication of the PSPP PA/FEIS and remains G5T2T3; however, its HP S rank has changed from S2.2 to S2. A total of 22 plants were documented in the PSPP BRSA during the 2010 surveys; half of which (11) occur within the Project Disturbance Area along the gen-tie line (PSPP PA/FEIS, p. 3.18-16). California ditaxis was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Harwood's Eriastrum

Harwood's eriastrum, also known as Harwood's phlox, or Harwood's woollystar, is a BLM Sensitive spring annual currently known from only 14 documented locations worldwide. It has a Rare CNPS of 1B.2, which indicates it is rare, threatened or endangered throughout its range. Since publication of the PSPP PA/FEIS, its HP G and S ranks have changed from G2/S2 to G3/S3, indicating that its HP status was downgraded from Imperiled to Vulnerable during the last status review. All stabilized and partially stabilized dunes are considered to be suitable habitats for this species in the BRSA. This species was not observed during 2009 field surveys; however, a total of two Harwood's eriastrum plants were observed in one area of the partially-stabilized dunes in the northeast corner of the PSPP BRSA during spring 2010 field surveys (PSPP PA/FEIS, p. 3.18-15). No Harwood's eriastrum were found within the Project Disturbance Area (Id.). Harwood's eriastrum was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Utah Milkvine

Utah milkvine has a CRPR of 4.2, meaning that it has limited distribution in California and that some of the occurrences are threatened. Its CRPR and HP G and S ranks have not changed since publication of the PSPP PA/FEIS. Until discovered growing on the Palo Verde Mesa (PSPP PA/FEIS, p. 3.18-16), it was believed that the project was outside of the range of this species. This species was not found during 2009 field surveys; however, it was observed incidentally at a single location outside of the BRSA, east of Palen Lake (PSPP PA/FEIS, p. 3.18-16). No Utah milkvine were observed within the BRSA during 2009 or 2010 field surveys for the PSPP (Id.). Utah milkvine was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Atriplex sp.: "Palen Lake atriplex"

As described in the PSPP PA/FEIS (p. 4.17-10), a potentially new and undescribed taxon of saltbush (*Atriplex*) was discovered on the saline playa margins of Palen Dry Lake in 2009 by a botanist with the U.C. Reserve System. It resembles the common four-wing saltbush (*Atriplex* *canescens*), a common plant of dunes which has very linear leaves, but the undescribed taxon has obovate leaves that distinguish it from all other *Atriplex canescens* subspecies (PSPP PA/FEIS, p. 3.18-16). At the time the PSPP PA/FEIS was published, the Applicant's botanical consultant tentatively was treating it as a new variety of the common four-wing saltbush and it continues to be treated as such in this Draft SEIS. Several plants of the new four wing saltbush were found in the PSPP BRSA during spring 2010 field surveys (PSPP PA/FEIS, p. 3.18-17). None occurred within the Project Disturbance Area (Id.). The undescribed Atriplex sp. was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Desert Unicorn Plant

Desert unicorn plant has a CRPR of 4.3, meaning it has limited distribution in California and its susceptibility to threat is presently low. It is also a covered species under the NECO Plan. Its CRPR and HP G and S ranks have not changed since publication of the PSPP PA/FEIS. Desert unicorn plant was not observed during Spring 2009 or 2010 field surveys performed for the PSPP (PSPP PA/FEIS, p. 3.18-17). It was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Abram's Spurge

Abram's spurge has a CRPR of 2.2, meaning it is fairly rare in California but more common elsewhere. Its HP G rank has not changed since publication of the PSPP PA/FEIS but its S status has downgraded from S1.2 (Critically Imperiled) to S2S3 (Vulnerable/Imperiled). As described in the PSPP PA/FEIS (p. 3.18-17), regional botanical experts have concluded that this species may be missed if surveys are only conducted within a mid-March through mid-April window, and that a full inventory at multiple temporal windows are necessary in order to capture all appropriate growing conditions (typically following 12 to 18 mm rain events) (PSPP PA/FEIS, p. 3.18-18). Abram's spurge was not identified during spring 2009 or 2010 botanical surveys, and fall surveys completed in October 2010 did not detect this species in the PSPP BRSA (Id.). The species was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Flat-seeded Spurge

Flat-seeded spurge has a CRPR of 1B.2, meaning it is rare, threatened, or endangered in California and elsewhere and some of the occurrences face known threats. Its HP S rank has not changed since publication of the PSPP PA/FEIS. The project occurs within its range, suitable habitat is present, and as an ephemeral summer annual it may be under-surveyed and its potential to occur cannot be dismissed (PSPP PA/FEIS, p. 3.18-19). This species was not observed during spring 2009 or 2010 botanical surveys for the PSPP (Id.) or during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Glandular Ditaxis

Glandular ditaxis has a CRPR of 2.2, meaning that is it rare, threatened, or endangered in California but more common elsewhere, and some of the California occurrences face known threats. Since publication of the PSPP PA/FEIS, its HP S status has changed from S1S2 to S1 indicating that its sensitivity has increased to Critically Imperiled. As described in the PSPP PA/FEIS (p. 3.18-19), it can be detected during spring surveys but is more reliably detected in fall after the start of the rainy season. This species was not observed during spring 2009 or 2010 botanical surveys or during fall surveys completed in October, 2010 for the PSPP (Id.). Glandular ditaxis was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a

Lobed Ground Cherry

Lobed ground cherry is a late season perennial that blooms September to January. It has a CRPR of 2.3, meaning that is rare in California, but more common elsewhere. Since publication of the PSPP PA/FEIS, its HP S rank has downgraded from S1.2 (Critically Imperiled) to S2 (Imperiled). This species was not observed during spring 2009 or 2010 botanical surveys, or during fall surveys completed in October, 2010 for the PSPP (PSPP PA/FEIS, pp. 3.18-19, 3.18-20). Lobed ground cherry was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Dwarf Germander

Dwarf germander has a Rare Plant Rank of 2.2, meaning that is it rare, threatened, or endangered in California, but more common elsewhere, and fairly endangered in California. Its CRPR, HP G and S ranks have not changed since publication of the PSPP PA/FEIS. This species typically blooms from March to May but may also bloom from September through November. Dwarf germander was not observed during spring 2009 or 2010 botanical surveys, or during fall surveys completed in October, 2010 (PSPP PA/FEIS, p. 3.18-20). The species was not observed during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Jackass Clover

Jackass clover has a CRPR of 2.2 and is considered fairly endangered in California but more common outside California. Its CRPR and HP G and S ranks have not changed since publication of the PSPP PA/FEIS. As described in the PSPP PA/FEIS (p. 3.18-20), the populations of jackass clover at Palen Lake are considered to be unique stands and are included in this analysis as a sensitive natural community. This species was not observed during spring 2009 or 2010 botanical surveys performed for the PSPP (Id.), or during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Palmer's Jackass Clover

Around the time the PSPP PA/FEIS was published, jackass clover was a proposed new addition to the CNPS inventory system, proposed for listing as a CNPS 1B species. It eventually was listed as a 2.2 species and retains the status under the new CRPR system. Since publication of the PSPP PA/FEIS, Palmer's jackass clover has been assigned a HP G rank of G5T2T4, indicating global populations of Wislizenia refracta are secure, but ssp. palmeri varies from imperiled to apparently secure based on location. It was assigned an HP S rank of S1, indicating it is critically imperiled in California. This species was not observed during spring 2009 or 2010 botanical surveys performed for the PSPP (PSPP PA/FEIS, p. 3.18-21), or during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Winged Cryptantha

Winged cryptantha has a CRPR of 4.3, meaning that it has a limited distribution in California but is not very endangered. Its CRPR and HP G and S ranks have not changed since publication of the PSPP PA/FEIS. This species was not observed during spring 2009 or 2010 botanical surveys performed for the PSPP (PSPP PA/FEIS, p. 3.18-21), or during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Las Animas Colubrina

Las Animas colubrina has a CRPR of 2.3, indicating it is not very endangered in California and is more common elsewhere. Its CRPR and HP G and S ranks have not changed since publication of the PSPP PA/FEIS. It is a covered species under the NECO Plan. This species was not identified during spring 2009 or 2010 botanical surveys performed for the PSPP (PSPP PA/FEIS, p. 3.18-12), or during a March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Other Special Status Plant Species

Table 3.18-3 shows special-status plant species that could occur in the PSEGS BRSA but were not detected during spring and fall surveys in 2009 and 2010, or during a March 2013 spring survey. These species could be encountered in the PSEGS BRSA, but are not expected to occur due to a low to moderate probability of occurrence.

Jurisdictional Waters

As described in the PSPP PA/FEIS (p. 3.18-22 et seq.), a formal jurisdictional delineation for regulated waters was conducted by the PSPP Applicant in 2009 to determine the extent of potential jurisdictional waters of the U.S. and/or waters of the State within the site. Additional surveys for waters of the State were performed in 2013 for the proposed natural gas corridor, distribution yard, and revised gen-tie corridor (Karl, 2013b). Surveys included waters (and/or wetlands) regulated under the federal Clean Water Act and/or streams and associated habitat regulated under the California Fish and Game Code. The Applicant requested a jurisdictional determination (JD) of isolated waters (non-jurisdictional waters of the U.S.) from the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) (PSPP PA/FEIS, p. 3.18-22). The application states that there were no potentially jurisdictional waters of

TABLE 3.18-3
SPECIAL-STATUS PLANT SPECIES WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants		
Angel trumpets *Acleisanthes longiflora*	This species occurs in Sonoran desert scrub on carbonate soils from approximately 200 to 300 feet above MSL. There are two records from the Consortium of California Herbaria from the Colorado Desert, Palo Verde area (CCH, 2013).	This species has a low potential to occur since the elevation range of the project site is appropriate for this species although the BRSA does not support carbonate/limestone derived soils in mountainous areas.
Argus (=Darlington's) blazing star *Mentzelia puberula*	This species occurs in desert scrub and desert woodlands with limestone and granitic slopes above 2,000 feet in elevation. Based on 33 Consortium of California Herbaria database records, this species has been collected from Riverside, San Bernardino, and Imperial Counties from the Little and Big Maria Mountains and Coxcomb Mountain in Riverside County.	This species is not expected to occur in the BRSA due to lack of limestone and granitic slopes, which are soil types preferred by this species that are absent from the BRSA. The project site is located at approximately 130 to 200 feet above MSL, which is well below the typical elevation where this species typically occurs.
Arizona spurge *Chamaesyce arizonica*	This species occupies sandy areas in Sonoran desert scrub and has been reported from Imperial, Riverside, and San Diego Counties and portions of Arizona and Baja California (CNPS, 2013) from approximately 150 feet to 1,200 feet above MSL. There are seven database records from the Consortium of California Herbaria primarily from San Diego County but also from Riverside County often from sandy areas and transition areas between chaparral and desert habitats. The two records from Riverside County are near Palm Springs from Andreas Canyon (CCH, 2013).	Arizona spurge has a low potential to occur within the BRSA due to the presence of suitable habitat and appropriate elevation range of the project site.
Bitter hymenoxys *Hymenoxys odorata*	Bitter hymenoxys grows riparian scrub and Sonoran desert scrub from 150 feet to 500 feet above MSL. This species blooms from February through November (CNPS, 2013). Based on 15 records from the Consortium of California Herbaria, this species has been collected from Riverside, San Bernardino, and Imperial Counties. Riverside records are from the Palo Verde Valley, and from locales surrounding Blythe (CCH, 2013).There are six CNDDB records for this species for the entire State of California, two of which occur in Riverside County; the nearest CNDDB occurrence is a historical record approximately 28.7 miles southeast of the Project Area from sandy slope, low bottom lands and overflow flats (CDFW, 2013).	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. This species has a potential to occur within desert dry wash woodland, unvegetated washes, and Sonoran creosote bush scrub habitats within the project area.
Bitter snakewood *Condalia globosa* var. *pubescens*	Another common name for this species is spiny abrojo. Bitter snakewood occurs in Sonoran desert scrub from approximately 400 feet to 3,000 feet above MSL. Bitter snakewood blooms from March through May (CNPS, 2013). Based on 58 records Consortium of California Herbaria database, all records are from Imperial and Riverside Counties, with 7 records from Riverside. Most of these specimens were collected from the Chuckwalla Mountains approximately 10 miles south of Interstate 10, with one collected north of Bradshaw Stage Road/east of Imperial Gas Line Road (CCH, 2013). There are no CNDDB records for this species for California (CDFW, 2013).	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. The Project site occurs below the elevation where this species typically occurs.
California ayenia *Ayenia compacta*	This species occurs in Mojavean and Sonoran desert scrub from approximately 500 to 3,300 feet above MSL. This species blooms from March through April. There are 56 records from the Consortium of California Herbaria database from the Anza-Borrego area alone, and one from Riverside County from a sandy wash in the Santa Rosa Mountains off Martinez Canyon (CCH, 2013). The nearest CNDDB occurrence is a historical record from 1976 approximately 7.4 miles southwest of the project area in the Chuckwalla Mountains (CDFW, 2013).	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. This species has a potential to occur within Sonoran creosote bush scrub and desert wash habitats within the project area.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
California ditaxis *Argythamnia californica* = *Ditaxis serrata* var. *californica*	This species occupies Sonoran desert scrub and has been reported as occurring from San Bernardino, Riverside, Imperial, San Diego, and Sonora, Mexico (CNPS, 2013) from approximately 100 to 3,000 feet above MSL. There are 31 records from the Consortium of California Herbaria database primarily from Riverside County from sandy, open alluvial fans (CCH, 2013). There are 20 extant records in the CNDDB, all from Riverside County (CDFW, 2013).	California ditaxis has a low potential to occur within the PSEGS BRSA due to the presence of suitable habitat and records from the Chuckwalla Valley and Desert Center areas. A total of 22 plants were documented in the PSPP BRSA during the 2010 surveys; half of which (11) occur within the Project Disturbance Area along the gen-tie line (PSPP PA/FEIS, p. 3.18-16).The species was not observed during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
California satintail *Imperata brevifolia*	This species occurs in grassy areas found near chaparral, desert scrub, riparian scrubs, coastal scrub, wet springs, meadows, stream sides and floodplains from sea level to approximately 1,500 feet above MSL. There are no CNDDB records for this species within a 30-mile radius of the project (CDFW, 2013), but there are 71 records from the Consortium of California Herbaria database from many northern and southern California counties. Records from Riverside County are from the Palm Springs, San Jacinto Mountains, and San Bernardino Mountains area along irrigation ditches or streams (CCH, 2013).	California satintail has a low potential to occur within the PSEGS BRSA due to the presence of suitable habitat although lack of occurrences from the project area. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Chaparral sand verbena *Abronia villosa* var. *aurita*	This species occupies sandy soil areas of chaparral, coastal sage scrub, and sandy desert dunes (CNPS, 2013) from approximately 240 feet to approximately 4,800 feet above MSL. The nearest CNDDB occurrence is located approximately 5.4 miles north of the project, where approximately 100 plants were observed in 2012 in stabilized sand dune habitat (CDFW, 2013). There are 188 records in the Consortium of California Herbaria database, many of which are from Riverside County in the San Jacinto Mountains area. There were nine 2012 herbarium additions from Riverside County in 2012, and nine in 2011. Most of these specimens were collected from the north Palm Springs Mecca Hills and Temescal Canyon Road areas, with one collection from the Palen sand dunes (CCH, 2013). The 2012 Palen sand dunes specimen collection is likely the 2012 CNDDB occurrence record.	This species was collected in 2012 from the Palen sand dunes in the vicinity of the Desert Lily Sanctuary located on the southwest side of the Palen Mountains and at the south end of Palen Valley (CCH, 2013). This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Coachella Valley milkvetch *Astragalus lentiginosus* var. *coachellae*	The Coachella Valley Multiple Species Habitat Conservation Plan states that this species occurs on “dunes and sandy flats, along the disturbed margins of sandy washes, and in sandy soils along roadsides and in areas formerly occupied by undisturbed sand dunes. Within the sand dunes and sand fields, this milkvetch tends to occur in the coarser sands at the margins of dunes, not in the most active blows and areas. As this species is strongly affiliated with sandy substrates, it may occur in localized pockets where sand has been deposited by wind or by active washes. It may also occur in sandy substrates in creosote bush scrub, not directly associated with sand dune habitat (PSPP PA/FEIS, p. 3.18-24). This plant species blooms from February to May, producing pink to deep magenta-colored flowers. This species occurs on aeolian deposits with fewer than 25 occurrences in the Coachella Valley. Coachella Valley milkvetch depends on natural disturbances from fluvial and aeolian processes for seedling establishment (BLM, 2002).	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. and is not expected to occur in the project area. The distribution of Coachella Valley milkvetch is restricted to the Coachella Valley in Riverside County, between Cabazon and Indio. CVAG identifies six outlying occurrences within a 5-mile area along Rice Road in the Chuckwalla Valley north of Desert Center, California (PSPP PA/FEIS, p. 3.18-24); however, USFWS staff has indicated that these occurrences are not of the listed taxon (BLM, 2011).

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Cove's cassia *Senna covesii*	This species occurs on dry, sandy desert washes and slopes of the Sonoran Desert between 1,600 to 2,000 feet above MSL. This species occurs in sandy washes, roadsides, alkaline flats in the Mojave Desert and northern Sonoran Desert between 1,600 to 2,000 feet above MSL (CNPS, 2013). Two specimens from San Bernardino County were added to the Consortium of California Herbaria database in 2010 (CCH, 2013). The CNDDB has several records in Riverside County southwest of the project area, with the nearest occurrence recorded in 2011 approximately 5.0 miles south of the project in the Chuckwalla Mountains.	Cove's cassia has a low potential to occur within the PSEGS BRSA due to the presence of suitable habitat and the project site being located below the typical elevation range where this species is known from. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Crucifixion thorn *Castela emoryi*	This species occurs in Sonoran Desert and Mojavean Desert in scrub and playas with dry, gravelly washes, slopes, and plains from approximately 300 to 2,100 feet above MSL. There are 125 records in the Consortium of California Herbaria database from Riverside, San Bernardino, Imperial Counties among others (CCH, 2013) and this species often grows in grassy or hayfield habitats. Six specimens were added to the Consortium of California Herbaria database in 2012, from San Bernardino, Imperial, and Santa Barbara Counties. In 2010 and 2011, seven specimens were added from Riverside County from the Desert Center and Coxcomb Mountains area (CCH, 2013).There is a record from a hayfield in Chuckwalla Valley. The CNDDB contains 50 records for the species, many in Riverside County west of the project area and some scattered northeast and southeast of the project (CDFW, 2013); the nearest CNDDB occurrence was recorded in 2011 and is located 0.8 mile north of the project's gen-tie corridor.	This species has a low potential to occur within the PSEGS BRSA due to the presence of suitable habitat and appropriate elevation range of the project site. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Desert portulaca *Portulaca halimoides*	This species occurs in Joshua tree woodlands and has been reported from Riverside, San Bernardino, and portions of Arizona and Baja, California from 3,000 feet to 3,600 feet above MSL (CNPS, 2013). There are no CNDDB records for this species (CDFW, 2013). There are 37 records in the Consortium of California Herbaria database (CCH, 2013) from San Bernardino and Riverside Counties. A new specimen was added in 2012, collected from San Bernardino County (CCH, 2013).	This species is not expected to occur within the PSEGS BRSA due to lack of typical habitat associations and the project site being located outside of the elevation range. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Desert sand parsley *Ammoselinum giganteum*	This species occupies Sonoran creosote bush scrub and has been reported from Riverside County, California and portions of Arizona (CNPS, 2013) at approximately 1,200 feet elevation. There is only one CNDDB record for the species in California (CDFW, 2013), and there are 2 historic records from the Consortium of California Herbaria database from Riverside County from the Chuckwalla Valley where this species was observed growing in dry basins at 500 feet above MSL (CCH, 2013).	Desert sand parsley has a low potential to occur within the PSEGS BRSA due to presence of suitable habitat and reported occurrences from the Chuckwalla Valley. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Desert spike moss *Selaginella eremophila*	This is a dense, mat forming, non-flowering plant. This species occurs in Sonoran creosote bush scrub in gravelly or rocky soils from approximately 600 to 2,700 feet above MSL. There are 40 records in the CNDDB, with 2 from Riverside County south and southwest of the project area from 1922 and 1964; the nearest occurrence is the 1922 record located approximately 4.2 miles south of the project (CDFW, 2013), There are 94 records in the Consortium of California Herbaria database from mostly Riverside and San Diego Counties with several records from Anza-Borrego Desert State Park, Palm Springs, Palm Canyon, and San Jacinto Mountain Range. One collection from Riverside County is from the vicinity of the Chocolate-Chuckwalla Mountain region near the north side of the Orocopia Mountains from sloped rocky, shady surfaces in gravelly soils (CCH, 2013); additions to the database since 2009 were collected from Riverside County from the Coachella Valley and the Little San Bernardino Mountains.	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. This species has a low potential to occur within the PSEGS BRSA give the presence of suitable desert scrub habitat and historic collections from the project area, although the project site is located below the typical elevation range of this species.
Dwarf germander *Teucrium cubense* ssp. *depressum*	This species occurs in desert dune, playa margins, and Sonoran desert scrub from approximately 100 feet to 1,200 feet above MSL. This species typically blooms from March to May but may also bloom from September through November. This species typically occurs in sandy soils and wash habitats and is known from fewer than 10 occurrences in California (CNPS, 2013). There are 15 records from Consortium of California Herbaria database from Riverside and Imperial Counties, with no new additions since 1986 (CCH, 2013); there are records from the Chuckwalla Valley in the Hayfield area and Palo Verde Valley. There is a 1979 CNDDB record from Wiley's Well Road (400 feet elevation) (CDFW, 2013) approximately 16.5 miles southeast of the project; the nearest CNDDB occurrence is a CDFW,2001 record from subsaline flat habitat along the Colorado River aqueduct, located approximately 15.6 miles southwest of the project (CDFW, 2013).	This species has a low potential to occur due to the presence of suitable habitat and appropriate elevation range of the site. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Foxtail cactus *Coryphantha alversonii*	This species occurs on rocky, granitic soils in Sonoran and Mojavean desert scrub from 200 feet to 4,600 feet above MSL. Prior to conducting spring 2009 field surveys, a reference population was observed on April 9, 2009 at a gravel pit northwest of Blythe along State Route 95 and several individuals were observed in relatively undisturbed Sonoran creosote bush scrub on granitic rock, a preferred habitat type of this species (CNPS, 2013). This species was not found during surveys performed in the PSPP BRSA. There are 37 records of this species from the Consortium of California Herbaria database from Riverside, Imperial, and San Bernardino Counties, including from the Chuckwalla Valley from rocky, granitic slopes (CCH, 2013). There were 4 additions to the database since 2010, with 1 from Riverside County from the Cottonwood Mountains area (CCH, 2013).The CNDDB contains 55 records for the species, most of them from Riverside County (CDFW, 2013). The nearest occurrence was documented in 1982, located 1.3 miles west of the project's gen-tie corridor along Interstate 10 (CDFW, 2013).	Foxtail cactus has a low potential to occur within the PSEGS BRSA due to the presence of suitable desert scrub habitat and appropriate elevation of the site although lack of rocky, granitic soils. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Mesquite nest straw *Stylocline sonorensis*	This species occupies Sonoran desert scrub around 1,300 feet elevation and has been reported from Riverside County and portions of Arizona and Sonora, Mexico (CNPS, 2013). There are 79 CNDDB records, mostly from Kern County (CDFW, 2013). There are 2 records from the Consortium of California Herbaria database from Riverside County both from the Chuckwalla Mountains, Hayfields region from 1930 (CCH, 2013).	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. Mesquite nest straw has a low potential to occur within the PSEGS BRSA due to suitable habitat present within the project site.
Orocopia sage *Salvia greatae*	This species occurs in the southeastern Sonoran Desert and is associated with the Orocopia and Chocolate Mountains on alluvial slopes between 100 and 800 feet above MSL. There are 62 records from the Consortium of California Herbaria database, several from the Chocolate, Chuckwalla, and Orocopia mountain areas (CCH, 2013). Two Riverside County occurrences were added to the database in 2011, both from the Chocolate Mountains area (CCH, 2013). There are 25 records in the CNDDB, many from southwestern Riverside County (CDFW, 2013); the nearest documented occurrence is located approximately 21.8 miles southwest of the project.	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. This species has a low potential to occur within the PSEGS BRSA due to the presence of suitable habitat and appropriate elevation range of the site.
Pink fairyduster *Calliandra eriophylla*	This species occurs in the Sonoran Desert in sandy washes, slopes and mesas from 350 to 5,000 feet above MSL. There are 96 records from the Consortium of California Herbaria database, several from the Chocolate-Chuckwalla Mountains area in Imperial and San Diego Counties (CCH, 2013). There were 9 additions to the database between 2009 and present, all collected from Imperial County (CCH, 2013). There are 50 records in the CNDDB, mostly from other counties; however, the nearest documented Riverside County occurrence is a 1964 record along Interstate 10 approximately 6.3 miles east of the project (CDFW, 2013).	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard. Pink fairy duster has a low potential to occur within the PSEGS BRSA due to suitable habitats, appropriate elevation range of the site, and reported records from the project area.
Pink velvet mallow *Horsfordia alata*	This species occurs in the Sonoran Desert in California, Arizona, and Mexico. It occurs in Sonoran desert scrub from approximately 300 to 1,500 feet above MSL. There are no CNDDB records for this species for the entire state of California (CDFW, 2013).The Consortium of California Herbaria database contains 27 records from Riverside, Imperial, and San Diego Counties (CDFW, 2013), with no new additions since 2006 (CCH, 2013). The most recent collections (2005, 2006) have been from the Chocolate, Chuckwalla, and Cargo Muchacho Mountains approximately 50 miles south of the project area and are believed to be extant.	This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Sand evening-primrose *Camissonia arenaria*	This species occupies sandy and gravelly areas of Sonoran desert scrub and has been reported from Imperial and Riverside Counties and areas of Arizona and Mexico from 200 feet to 2,700 feet above MSL (CNPS, 2013). There are 22 records of this species in the Consortium of California Herbaria database, several from the Chocolate-Chuckwalla Mountains, Palo Verde Valley, and Ogilby Pass area (CCH, 2013). Two specimens were added to the database in 2011, one from Riverside County in the Canyon Springs area (CCH, 2013). There are no CNDDB records for this species (CDFW, 2013).	This species has a low potential to occur within the PSEGS BRSA due to the presence of suitable habitat and appropriate elevation of the site. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.

TABLE 3.18-3 (Continued)
SPECIAL-STATUS PLANT SPECIES WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Plants (cont.)		
Slender woolly-heads *Nemacaulis denudata* var. *gracilis*	This species occupies desert sand dunes, coastal dunes, and Sonoran desert scrub (CNPS, 2013) from 150 to 1,200 feet above MSL. There are 45 records in the Consortium of California Herbaria database from the Palm Springs, Indian Wells area in Riverside County (CCH, 2013); 5 specimens were added to the database in 2010 and one in 2012, mostly from San Bernardino County (CCH, 2013). The one Riverside County specimen was collected from the Palen/McCoy Wilderness (CCH, 2013). There are 23 records in the CNDDB, with a few in western Riverside County (CDFW, 2013); the nearest CNDDB record is located approximately 26.4 miles southwest of the project.	Slender woolly-heads has a low potential to occur within the PSEGS BRSA due to suitable habitat and appropriate elevation range of the site. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Small-flowered androstephium *Androstephium breviflorum*	This species occurs in desert dune and Mojavean desert scrub from approximately 700 feet to 2,000 feet above MSL (CNPS, 2013). This species blooms from March through April and often occurs on desert bajadas. The nearest CNDDB record for this species is from Cadiz Valley from Riverside and San Bernardino Counties approximately one mile north of Highway 62 during 1995 from a sandy, Mojavean Desert shrub-land bajada (CDFW, 2013) located approximately 24.2 miles north of the project. There are 27 records in the Consortium of California Herbaria database from Riverside, San Bernardino, and Inyo Counties. Eight specimens were added to the database between 2009 and present, with two from Riverside County in the Arica Mountains area (CCH, 2013).	This species has a potential to occur within the site due to suitable sand dune habitat and appropriate elevation range of the site. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Spearleaf *Matelea parvifolia*	This species occurs in Mojavean and Sonoran desert scrub from 1,320 feet to approximately 3,300 feet above MSL. This species blooms from March through May (CNPS, 2013). The nearest extant CNDDB record for this species is from the Chuckwalla Bench area during 1986 from desert dry wash woodland and creosote bush scrub habitats (CDFW, 2013) located approximately 14.5miles southwest of the project; the most proximate record is historic, from 1922, located approximately 4.2 miles south of the project. There are 23 records in the Consortium of California Herbaria database, from Riverside, San Diego, Imperial, and San Bernardino Counties. Riverside County collections are from Joshua Tree National Park, the Orocopia Mountains, and Chuckwalla Bench (CCH, 2013).	This species has a potential to occur within the Project Disturbance Area, though the site is located below the typical elevation range of this species. This species was not observed during 2009 or 2010 spring and 2010 fall surveys of the PSPP BRSA, or during a March 2013 survey of the new gen-tie corridor, natural gas corridor, and natural gas distribution yard.
Wiggins' cholla *Cylindropuntia (=Opuntia) wigginsii*	Wiggins' cholla is not recognized as a species, but is considered a hybrid of silver cholla (*C. echinocarpa*) and pencil cholla (*C. ramosissima*). Wiggins' cholla is not found as a separate species in The Jepson Manual (1993) nor in Munz et al A California Flora and Supplement (1973); however, the BLM's Proposed Northern and Eastern Colorado Desert Coordinated Management Plan identifies Wiggins' cholla as a special-status species (BLM, 2002). CDFW and CNPS recognizes Wiggins' cholla as a CRPR 3.3 species meaning more information is needed about this species and it is not considered very endangered in California. CNPS also considers this species a sporadic hybrid of the two Cylindropuntia species mentioned above, and identifies occurrences in Riverside, Imperial, San Bernardino, and San Diego Counties (CNPS, 2013). There are 2 records in the Consortium of California Herbaria database, from Imperial and San Bernardino Counties (CCH, 2013).	Wiggins' cholla is not expected to occur in the project area.

the U.S. within the Project Disturbance Area based on the fact that features occur in a closed basin with no identifiable outlet and have no direct hydrologic connection to any navigable waters. A revised jurisdictional delineation report was submitted as part of the Streambed Alteration Agreement application to CDFG on November 25, 2009, which included all delineated aquatic features, including desert washes which lack a continuous component of desert wash woodland but provide other wildlife habitat function and values (PSPP PA/FEIS, p. 3.18-22). The revised delineation also included areas of waters and wash-dependent vegetation downstream of the PSPP BRSA that were likely to be indirectly affected by the diversion of waters at the upstream side of the Project into a perimeter stormwater conveyance channel. That area of potential indirect effect included the full extent of the downstream washes that would be deprived of flows. Additionally, the delineation was revised to include the full floodplain width of compound features of multiple small channels with variable flow pathways, including the interfluves of mixed upland and wash-dependent vegetation.

Presently, the extent of jurisdictional waters of the State occurring in those portions of the PSEGS BRSA that coincide with the PSPP BRSA is identified as 373.06 acres throughout the fenced project site, natural gas corridor, and the gen-tie line corridor (Karl, 2013a; Karl, 2013b). The total area of waters of the State estimated within the Project Disturbance Area includes 204.37 acres of desert dry wash woodland and 168.69 acres of unvegetated ephemeral dry washes. The 0.54 acre of off-site waters includes: 0.03 acre of desert dry wash woodland and 0.51 acre of unvegetated ephemeral dry wash.

The revised delineation also included waters associated with a proposed new substation south of I-10 and the interconnecting transmission line. However, the impacts and mitigation measures associated with the substation have been analyzed in the context of the Desert Sunlight Project, and are not attributable to the PSEGS. Accordingly, the acreages itemized above include features that cross the interconnecting transmission line alignment but do not include waters contained within the footprint of the proposed substation.

Hydrology

PSEGS site waters occur within the Chuckwalla-Palen hydrologic unit, or “watershed” of the Colorado River Hydrologic Basin Planning Area (PSPP PA/FEIS, p. 3.18-28) and are described in detail in the PSPP PA/FEIS. Desert streams contract and expand dramatically in size due to extreme variations in flow, which can range from high-discharge floods to periods when surface flow is absent; this spatial variation in habitat or ecosystem size is a fundamental, defining feature of these streams (PSPP PA/FEIS, p. 3.18-30). Within this fundamental variation, the hydrology of the site has not changed significantly since publication of the PSPP PA/FEIS.

3.18.6 Sand Dune Transport System

As described in PSPP PA/FEIS Section 3.18.6 (p. 3.18-30 et seq.), the BRSA encompasses several different land units that vary along a southwest to northeast gradient in the degree of aeolian sand transport they experience. The majority of the PSEGS facilities (approximately 85 percent) would be constructed within the least sandy land unit, which is almost entirely a stable, coarse gravel alluvial fan surface referred to as Zone IV. The vegetation cover is largely sparse creosote bush scrub with ironwood trees in the larger washes.

The northeast dune area is a slightly more active wind-blown sand area with relatively shallow sand deposits (Zone III), where approximately 15 percent of PSEGS facilities would be constructed. This is an area of shallow vegetated sand dunes with a transition from creosote bushes to grasses. The dunes are in relative equilibrium. At the northeastern portion of the project site within the lower alluvial fan is an area of deeper and more active vegetated sand dunes (Zone II), where less than one percent of PSEGS facilities would be constructed. This zone lies within the Palen Dry Lake – Chuckwalla sand transport corridor, a regionally significant geomorphic feature that provides sand build and support sand dune habitat. This sand corridor stretches down the Chuckwalla Valley to Blythe and the Colorado River.

The most active area of sand transport is Zone I, northeast of the project boundary. Two sand transport corridors come together just to the east of the project: the Palen Valley corridor which runs from north to south along the eastern edge of the project and the Palen Dry Lake – Chuckwalla Valley corridor which runs northwest to southeast through the northeastern half of the project site.

3.18.7 Invasive and Noxious Weeds

As described in PSPP PA/FEIS Section 3.18.7 (p. 3.18-31 et seq.), noxious and invasive weeds are species of non-native (exotic) plants included on the weed lists of the California Department of Food and Agriculture (CDFA), the California Invasive Plant Council (Cal-IPC), or those 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 (Cal-IPC, 2006). Non-native plant species recorded as part of project botanical surveys during 2009 and 2010 are located especially in the southern portion of the BRSA; they are Sahara mustard, Russian thistle, saltcedar, and Mediterranean grass, and they were described in detail in the PSPP PA/FEIS (pp. 3.18-32, 3.18-33). Each of these species is identified on a list of the region's worst weeds compiled by the Natural Resource Conservation Service for the Low Desert Weed Management Area (PSPP PA/FEIS, p. 3.18-32). Changes to invasive statuses that have occurred since publication of the PSPP PA/FEIS are noted below. No significant stands of exotic weeds were observed during a March 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

Sahara Mustard

Sahara mustard (*Brassica tournefortii*), also called African mustard, was found in disturbed areas throughout Sonoran creosote bush scrub habitat PSPP PA/FEIS (p. 3.18-32). This species continues to be a BLM weed species of concern and has a Cal-IPC inventory rating of High[ly invasive]. It is not listed by the California Department of Food and Agriculture (CDFA).

Russian Thistle

Russian thistle (*Salsola* sp.), also called tumbleweed, was found in several habitat types in the Project Disturbance Area, including dune, desert scrub, desert dry wash woodland, and Sonoran creosote bush scrub (PSPP PA/FEIS, p. 3.18-32). This species is not a BLM weed species of concern. Cal-IPC has determined that this genus' invasiveness rating varies from limited to limited-to-moderate in California based on species (Cal-IPC, 2013). The California Department of Food and Agriculture (CDFA) rating also varies from a "C" to an "A" based on species. A C rating means that the pest is of known economic or environmental detriment and, if present in California, it is usually widespread, while an A rating means it is either not known to be established in California or is present in a limited distribution that allows for the possibility of eradication or successful containment.

Tamarisk or Saltcedar

Tamarisk or saltcedar (*Tamarix ramosissima*) was observed interspersed throughout desert dry wash woodland within the BRSA (PSPP PA/FEIS, p. 3.18-32). This species continues to be a BLM weed species of concern, to have a Cal-IPC inventory rating of High[ly invasive], and a CDFA "B" rated species, meaning it is a pest of known economic or environmental detriment of limited distribution.

Mediterranean grass

Mediterranean grass (*Schismus* spp.) is prevalent throughout Sonoran creosote bush scrub within the BRSA. BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to eradicate. This plant continues to be a BLM weed species of concern and has a Cal-IPC rating of Limited invasiveness. It is not listed by the CDFA. (PSPP PA/FEIS, p. 3.18-33)

3.18.8 Cacti, Yucca, and Native Trees

As described in the PSPP PA/FEIS (p. 3.18-33 et seq.), 2009 and 2010 surveys also included an inventory of native cacti, succulents and native trees that are not considered rare (e.g., they are not tracked by CNDDB or included on the CNPS special-status plant lists) but the harvesting of these native plants is regulated under the California Native Plant Protection Act (Fish and Game Code §§1900-1913) and the California Desert Native Plant Act of 1981 (Food and Agricultural Code § 80001 et. seq.; Fish & Game Code §§1925-1926), which prohibit unlawful harvesting of non-listed native desert plants of the state (PSPP PA/FEIS, p. 3.18-33). A total of four species in the Cactaceae family were observed during 2009 field surveys, including teddybear cholla (*Cylindropuntia bigelovii*), silver cholla (*C. echinocarpa*), pencil cholla (*C. ramosissima*), and common fishhook cactus (*Mammilaria tetrancistra*). Additionally, native trees that were found during 2009 field surveys including smoke tree (*Psorothamnus spinosus*), ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia florida*), ocotillo (*Fouquieria splendens ssp. splendens*), and honey mesquite (*Prosopsis glandulosa var. torreyana*). Additional mapping of cacti species was performed during 2010, and California barrel cacti (*Ferocactus cylindraceus*), cottontop cactus

(*Echinocactus polycephalus*), and hedgehog cactus, *(Echinocactus engelmannii*) were found. A single location with five barrel cacti was observed within the buffer BRSA and south of I-10, and a single location of cottontop cactus was found in the eastern portion of the Project Disturbance Area. No additional cacti, yucca, or native trees were observed during the March 30, 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

3.19 Visual Resources

Section 3.19 of the PSPP PA/FEIS describes the PSPP study area in terms of its existing value as a visual resource, and summarizes the applicable regulatory framework for managing and protecting scenic values. The regulatory framework and methodology for managing and protecting scenic resources have not changed since publication of the PSPP PA/FEIS and remain applicable to the PSEGS, and therefore are not supplemented in this section. However, because the PSEGS dimensions and extent would differ from those identified in the PSPP PA/FEIS, the range of potential effects on visual resources also would be different. Accordingly, a revised visual resources study area is described below.

3.19.1 Project Study Area

The PSEGS site is located in the Mojave Desert geomorphic province of California, also referred to as the Sonoran Desert section of the Basin and Range physiographic region of the United States.[1] More specifically, the project site lies in the Chuckwalla Valley, which measures approximately 40 miles east-west and 15 miles north-south. Numerous isolated mountain ranges surround the valley, including from the north clockwise, the Coxcomb, Granite, Palen, McCoy, Mule, Little Chuckwalla, Chuckwalla, and Eagle Mountain ranges. These ranges are separated by expanses of internally-drained, sparsely vegetated desert plains.

The Chuckwalla Valley floor is mantled by scattered patchworks, or clumps, of Sonoran creosote bush giving it a course, dark green texture, against the smoother tan sandy soil. Trees are scarce about the valley, occurring mainly among developed areas. Bajadas, or converging alluvial fans, drain the surrounding mountains and add color variety and a braided texture to the valley. The bajadas give way to dry desert washes which terminate at dry lakes.

Figure 3.19-1 provides a view of the PSEGS area, as seen from a dirt road immediately north of I-10. As is evident from the photograph, the gently sloping, relatively uniform valley floor contrasts sharply with the dark desert varnish of the rocky and jagged peaks of the surrounding mountain ranges, some of which rise to a height of 4,000 feet. In the photo, the PSEGS would be located in the immediate foreground, and would extend into the middleground of the photo occupied by the dry lake bed. Figure 3.19-2 provides a number of context photographs illustrating common visual features of the desert environment, and the characteristic landscape of the Chuckwalla Valley area. As the figure illustrates, the valley floor is characterized by lightly tan colored, sandy soils, mottled with dark-green shrubby vegetation and intermittent clumps of low-growing grasses. The views are panoramic, inhibited only by the occasional tree or built structure, and extend to the mountain ranges that frame the horizon.

The study area for visual resources is defined as all land areas from which any element of the PSEGS would be visible (i.e., the PSEGS's viewshed). The project viewshed comprises the visual

1 California's geomorphic provinces and the physiographic regions of the U.S. are naturally defined geologic regions that display a distinct landscape or landform. These divisions are based on unique, defining features such as geology, topographic relief, climate, and vegetation. The distinction between California's geomorphic provinces and the physiographic regions of the U.S. is in the scale at which they are defined.

portion of the affected environment and is the basis for the visual impact analysis provided in Section 4.18, *Impacts on Visual Resources.* The viewshed map is shown in Figure 3.19-3, and was generated via computer-generated viewshed tools. The visual impact threshold distance (VITD) boundary for purposes of this analysis includes those areas within a 30 mile radius of the project site, which encompasses an area of approximately 2,827 square miles.

The map also depicts the status of various public lands within the viewshed. These include the National Park Service-managed Joshua Tree National Park and Wilderness; the BLM-managed Joshua Tree Wilderness, Palen/McCoy Wilderness, Little Chuckwalla Mountains Wilderness, and Chuckwalla Mountains Wilderness; and several BLM Areas of Critical Environmental Concern (ACEC), including those of Palen Dry Lake, Chuckwalla Valley Dune Thicket, Corn Springs, Chuckwalla, Alligator Springs, and Desert Lily. The project's visual intrusion upon these areas varies based upon observer location and terrain. For example, the PSEGS would be visible from approximately 4.9 percent of Joshua Tree National Park (JTNP) approximately 10 percent of the JTNP Wilderness Area (3DScape, 2013), and from the four BLM wilderness areas and five ACECs.

While mostly undeveloped, several cultural modifications are apparent within the Project viewshed. The Interstate 10 corridor bisects the viewshed, passing to the north of the Chuckwalla Mountains and to the immediate south of the project site. The uniform rectilinear green patches of agricultural operations to the northwest of the project site and north of Desert Center contrast with the surrounding dry, sparsely vegetated, and sinuous alluvial fans and rugged mountain faces. The Colorado River Aqueduct (CRA) also features prominently in the Chuckwalla Valley viewshed, comprising a conspicuous linear network of pipes, canals, and service roads that wind around and tunnel through the Coxcomb and Eagle Mountains. Other large-scale man-made features including mining operations, such as the Eagle Mountain Mine and surrounding settlement, located within the northwestern portion of the viewshed. Residential developments within the viewshed have a less distinct impact on the landscape than those previously discussed and range from individual ranges and rural residences to the small communities of Lake Tamarisk and Eagle Mountain, and the largest, Desert Center, with a population of 284 (U.S. Census Bureau, 2013).

The primary user groups that could have views of the PSEGS would be motorists along I-10 and State Route 177. Described more fully in Section 3.17, *Transportation and Public Access – Off Highway Vehicle Resources*, on average, the PSEGS would be visible by approximately 5,300 motorists during peak hour weekday travel on I-10 (i.e., by approximately 2,650 eastbound and 2,650 westbound travelers during the period when traffic volume is at its highest). Other groups likely to be affected include visitors to the Desert Lily Preserve and the Palen Dry Lake area, which are located north of the PSEGS site; motorists accessing the Corn Springs Campground and Chuckwalla Mountains Wilderness via Chuckwalla Valley and Corn Springs Roads; dispersed recreational users; and users seeking opportunities for solitude and unconfined recreation in the surrounding wilderness areas.

The Palen/McCoy Wilderness is immediately northeast of the site, but the area with views of the PSEGS is not used for recreation and features neither trails nor trailheads (CEC Genesis RSA, 2010). However, since the wilderness area is physically accessible, it may be visited on rare occasions by backcountry hikers and overnight campers. The portion of Joshua Tree National Park where the PSEGS could be visible does not contain visitor-serving facilities such as hiking trails, campgrounds or picnic areas—these occur in the central and western portions of the Park, in areas located over 15 miles east of the PSEGS site that are unlikely to have views of the solar fields and structures. Even though the bright light of the two power tower receivers could be visible, it would be small in size and possibly diffused in atmospheric haze. However, the PSEGS could be visible from elevated vantage points within the Coxcomb Mountains, which is the eastern-most part of the park.

3.19.2 BLM Visual Resource Management (VRM) Policy

BLM's Visual Resource Management Policy is the agency's implementation of legal requirements for managing scenic resources, established through NEPA and FLPMA. Under FLPMA, BLM has developed and applied a standard visual assessment methodology to inventory and manage scenic values on lands under its jurisdiction. The BLM manual M-8400-Visual Resource Management, Handbook H-8410-Visual Resource Inventory, and Handbook H-8431-Visual Resource Contrast Rating, set forth the policies and procedures for determining visual resource values, establishing management objectives, and evaluating proposed actions for conformance to the established objectives for BLM administered public lands.

As discussed more fully in the PSPP PA/FEIS (pp. 3.19-2 through 3.19-6), VRM classes typically are assigned by the BLM through its RMPs; however in the case of the CDCA Plan VRM classes have not been established. Instead, BLM land managers must establish "Interim VRM Classes" for individual projects on a case-by-case basis. The DPV 2 EIR/EIS established Interim VRM Classes that cover the PSEGS site, which were mapped by the consultants and approved by the BLM. In accordance, the DPV 2 EIR/EIS established Interim VRM Classes are used for this Project (see Figure 3.19-4). The entire PSEGS site, including the areas encompassing the heliostats, power blocks, and transmission line corridor, is classified as Interim VRM Class III. Wilderness Areas within the viewshed were identified as Interim VRM Class I. As shown in Figure 3.19-4, the three predominant classes of BLM-administered land within the PSEGS viewshed include VRM Class I in the Palen/McCoy and Chuckwalla Mountain wilderness areas; VRM Class II in BLM lands south and southeast of I-10 and the PSEGS site, and VRM Class III along the I-10 corridor and the Chuckwalla Valley north of I-10.

Table 3.19-1 displays the BLM's four visual resource management classes and the objective of each class. The PSEGS would be managed in accordance with Interim VRM Class III objectives. The Interim VRM Class III management objective reflects and is consistent with the land use decisions within the existing plans because the area is also under Multiple-Use Class M (Moderate Use), which 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. The objective of Interim VRM Class III is to partially retain the existing character of the landscape.

TABLE 3.19-1
VISUAL RESOURCE MANAGEMENT CLASSES

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape
Class IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3.20 Water Resources

Section 3.20 of the PSPP PA/FEIS (p. 3.20-1 et seq.) describes the water-related features and characteristics of the PSPP site and broader region, including characteristics of regional climate and precipitation (PSPP PA/FEIS Section 3.20.1, p. 3.20-1 et seq.), groundwater (PSPP PA/FEIS Section 3.20.2, p. 3.20-3 et seq.), and surface water hydrology (PSPP PA/FEIS Section 3.20.3, p. 3.20-15 et seq.). The PSPP PA/FEIS describes subsurface water budgets, flow, and quality, along with geologic composition of the Chuckwalla Valley Groundwater Basin (CVGB). For surface water hydrology, the section identifies washes, springs, seeps, and playa lakes in the vicinity of the PSPP. Beneficial uses, as identified in the Colorado River Basin Regional Water Quality Control Board's (RWQCB) water quality control plan (or "Basin Plan") for surface and groundwater also are summarized.

The PSEGS would occur entirely within the CVGB and be located almost entirely within the area described and analyzed for the PSPP. The water resources setting information, as presented in PSPP PA/FEIS Section 3.20 remains valid and pertinent to the PSEGS. Hence, the water resources setting information is not supplemented in this section.

The new 50-foot natural gas supply pipeline corridor traversing south of the PSEGS site and the portion of the gen-tie line that would be shifted would be located outside the area specifically evaluated as part of the PSPP; however, both proposed routes lie in sufficiently close proximity to the PSPP area (see Figures 3.20-1 through 3.20-6) that the water resources setting information provided in the PSPP PA/FEIS applies equally to the natural gas pipeline and gen-tie line shift proposed as part of the PSEGS, and so is not supplemented in this section.

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3.21 Wild Horse and Burros

As described in PSPP PA/FEIS Section 3.21 shown on Map 2-26 of the approved NECO Plan (BLM CDD, 2002), there are no Wild Horse and Burro Herd Areas or Herd Management Areas within or adjacent to the PSPP ROW application area. This remains true for the PSEGS.

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3.22 Wildland Fire Ecology

Section 3.22 of the PSPP PA/FEIS describes wildland fire ecology and management in the PSPP study area. The section identifies the major native habitat types in the project vicinity, including Sonoran creosote bush scrub, desert dry wash woodland, unvegetated ephemeral dry wash, desert sink scrub, and desert dunes, and the more fire-prone exotic plant communities occurring within nearby developed and agricultural lands. This discussion remains valid and applicable to the PSEGS study area. No new vegetation communities were identified for the PSEGS. The new natural gas corridor and distribution yard, and revised gen-tie line route associated with the PSEGS collectively support 22.43 acres of Sonoran creosote bush scrub, desert dry wash woodland, and unvegetated ephemeral dry wash. This minor addition represents about 0.6 percent of the total 3,896-acre PSEGS area.

As described in PSPP PA/FEIS Section 3.22 (p. 3.22-1), wildland fires in the project area occur less frequently and are generally smaller than in other parts of the state, and are caused mainly by lightening or vehicles. The Fire Management Activity Plan (FMAP) 1996 for the California Desert is identified as the primary fire management plan for BLM and NPS-managed lands in the project vicinity. The dominant plant communities in the project area, such as Sonoran Desert Scrub, are not fire-adapted; meaning repeated wildfire is detrimental to them long-term. Because disturbed areas are most likely to support or carry wildfires, fire suppression techniques seek to minimize surface disturbance to the extent practical in all habitats.

The description in PSPP PA/FEIS Section 3.22 (p. 3.22-1) of conditions contributing to increased wildlife fire potential (e.g., soil disturbance and the related colonization by exotic and invasive weedy annual plants), wildland fire suppression methods, and post-fire suppression rehabilitation methods all are applicable to the PSEGS and provide an adequate baseline for wildland fire ecology for the PSEGS.

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3.23 Wildlife Resources

Section 3.23 of the PSPP PA/FEIS describes wildlife resources of the PSPP Biological Resources Study Area (BRSA), which consists of a 14,771 acre area that encompasses the approximately 3,899-acre Project Disturbance Area (including the transmission disturbance area and a surrounding buffer area). In addition, the PSPP PA/FEIS provides detailed summaries of special status bird, reptile, and mammal species that are known to occur, or could potentially occur in the Biological Resource Study Area and vicinity. A list of these species is provided in PSPP PA/FEIS, Table 3.23-1.

As much of the PSEGS would occur within the previously described PSPP disturbance area, there is considerable overlap in the BRSA's of the two projects. Accordingly, PSPP PA/FEIS discussions of wildlife area planning and management, and the known or potential presence of special status species, are valid and relevant for the PSEGS BRSA. For these resources, unless otherwise specified, no additional discussion is provided here. Rather, this section supplements PSPP PA/FEIS Section 3.23 to reflect biological resource considerations that may have changed as a result of the proposed configuration of the PSEGS, shift in the gen-tie line alignment, and extension of the natural gas line. This section also includes revisions stemming from more current information regarding the types and distribution of those resources described in the PSPP PA/FEIS that would also occur within the PSEGS Biological Resource Study Area. This section draws from the PSPP PA/FEIS and the following surveys that were provided by the Applicant:

1. Summary of Spring Wildlife and Plant Surveys (Karl, 2013a)
2. Summary of Survey for Jurisdictional State Waters (Karl, 2013b)
3. PSEGS Spring 2013 Golden Eagle Nest Survey Results Interim Report (Bloom Biological, Inc., 2013a)
4. PSEGS Winter 2013 Golden Eagle Survey Results (Bloom Biological, Inc., 2013b)
5. PSEGS Preliminary Spring 2013 Pre-construction Avian Field Survey Results (Bloom Biological, Inc., 2013c)

As described in Section 3.18, the PSEGS Disturbance Area is entirely within the PSPP BRSA, the gen-tie line route is the same for most of its length, and the access road is the same. The PSEGS BRSA differs in two regards: (1) the gen-tie line route is shifted to the west by approximately 1.3 miles (resulting in an associated 18.9 acres of new disturbance area); and (2) a natural gas line and distribution yard are added to the south (resulting in an associated 3.53 acres of new disturbance area). The new gen-tie line corridor disturbance area was surveyed in spring 2013 for the PSEGS (Karl, 2013a), and surveyed in past years for the Desert Sunlight Project and the Eagle Mountain Pumped Storage Project (PSEGS PTA, 2012). Biological surveys also were performed for the natural gas line extension and distribution yard in spring 2013 (Bloom Biological, 2013a; 2013c). The results of 2013 surveys have been incorporated into this Draft SEIS.

As described in the PSPP PA/FEIS, the project site is located within two areas designated in the NECO plan as wildlife habitat management areas (WHMA): Palen-Ford WHMA and Desert Wildlife Management Area (DWMA) Connectivity WHMA. Management emphasis for the Palen-Ford WHMA is on the management of the dunes and playas within the Palen-Ford dune system. Management emphasis for the DWMA Connectivity WHMA is on the geographic connectivity for the desert tortoise for the conservation areas east of Desert Center (i.e., connectivity between the Chuckwalla DWMA and the wilderness area north of I-10). The Palen-McCoy Wilderness is approximately 3 miles to the northeast of the project site, the Chuckwalla DWMA is located approximately 2 miles to the south, and the Palen Dry Lake ACEC borders the site to the east.

3.23.1 Special Status Wildlife

Special-status wildlife species are those that have been afforded special recognition by federal, State, or local resource agencies or organizations, are often of relatively limited distribution, and typically require unique habitat conditions. Special-status wildlife criteria have not changed since publication of the PSPP PA/FEIS, and like the PSPP PA/FEIS, all BLM Sensitive species are analyzed as special-status species for the purposes of this document.

Table 3.23-1 identifies those special-status wildlife species that are known to occur, or could potentially occur in the study area and vicinity, along with status updates that have occurred since publication of the PSPP PA/FEIS. Special-status species observed during the 2009 or 2013 field surveys are indicated by bold-face type (Karl, 2013a; Bloom Biological, 2013a; 2013c ; Solar Millennium, 2009; AECOM, 2010).

Desert Tortoise

The desert tortoise was fully described in PSPP PA/FEIS Section 3.23 (pp. 3.23-2 to 3.23-7), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As described in the PSPP PA/FEIS and summarized here, the site is located within the Colorado Desert Recovery Unit. Within this recovery unit, desert tortoise are found primarily in well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities. The highest desert tortoise densities within this recovery unit occur in the nearby Chuckwalla DWMA located south of the site. The majority of threats to the desert tortoise and its habitat are associated with human land uses. Protocol-level surveys of the PSPP BRSA were conducted between March 17 and May 22, 2009 and October 24 to 25, 2009 (substation site and buffer). Survey results of the Project Disturbance Area included 17 burrows (Class 3–5), 15 pallets (Class 4 or 5), and 19 tortoise shell remains (Class 5). Survey results identified seven tortoises (adult and juvenile) in the BRSA and four along the gen-tie line route; only one of these occurrences (along the gen-tie line) was within the Project Disturbance Area. Additional observations from project area buffers were noted in the Applicant’s 2010 *Revised Desert Tortoise Technical Report*, as described in the PSPP PA/FEIS (p. 3.23-7). During spring 2013 surveys, two recent burrows were found within buffer zones along the gen-tie line reroute

TABLE 3.23-1
SPECIAL-STATUS WILDLIFE KNOWN OR WITH POTENTIAL TO OCCUR IN THE BIOLOGICAL RESOURCES STUDY AREA

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/__/BLM Sensitive**
Birds		
Western burrowing owl	***Athene cunicularia hypugaea***	**CSC/BCC/BLM Sensitive**
Golden eagle	*Aquila chrysaetos*	CFP/BCC/BLM Sensitive
Short-eared owl	*Asio flammeus*	CSC/__/__
Ferruginous hawk	*Buteo regalis*	WL/BCC/BLM Sensitive
Swainson's hawk	***Buteo swainsoni***	**ST**/BCC/__
Prairie falcon	***Falco mexicanus***	**WL**/BCC/__
American peregrine falcon	*Falco peregrinus anatum*	CFP/BCC/__
Vaux's swift	***Chaetura vauxi***	**CSC**/__/__
Mountain plover	*Charadrius montanus*	CSC/FCT, BCC/BLM Sensitive
Northern harrier	***Circus cyaneus***	**CSC**/__/__
Gilded flicker	*Colaptes chrysoides*	SE/BCC/__
Yellow warbler	*Dendroica petechia sonorana*	CSC/BCC/__
California horned lark	***Eremophila alpestris actia***	**WL**/__/__
Yellow-breasted chat	*Icteria virens*	CSC/__/__
Loggerhead shrike	***Lanius ludovicianus***	**CSC/BCC**/__
Gila woodpecker	*Melanerpes uropygialis*	SE/BCC/__
Black-tailed gnatcatcher	*Polioptila melanura*	__/__/__
Purple martin	***Progne subis***	**CSC**/__/__
Vermilion flycatcher	*Pyrocephalus rubinus*	CSC/__/__
Yuma clapper rail	*Rallus longirostris yumanensis*	ST & FP/FE/__
Bendire's thrasher	*Toxostoma bendirei*	CSC/BCC/BLM Sensitive
Crissal thrasher	*Toxostoma crissale*	CSC/__/__
Le Conte's thrasher	***Toxostoma lecontei***	**WL/BCC/**__
Mammals		
Pallid bat	*Antrozous pallidus*	CSC/__/BLM Sensitive
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC/__/BLM Sensitive
Spotted bat	*Euderma maculatum*	CSC/__/BLM Sensitive
Western mastiff bat	*Eumops perotis californicus*	CSC/__/BLM Sensitive
Hoary bat	*Lasiurus cinereus*	__/__/__
California leaf-nosed bat	*Macrotus californicus*	CSC/__/BLM Sensitive
Arizona myotis	*Myotis occultus*	CSC/__/__
Cave myotis	*Myotis velifer*	CSC/__/BLM Sensitive
Yuma myotis	*Myotis yumanensis*	__/__/BLM Sensitive
Colorado Valley woodrat	*Neotoma albigula venusta*	__/__/__

TABLE 3.23-1 (Continued)
SPECIAL-STATUS WILDLIFE KNOWN OR WITH POTENTIAL TO OCCUR IN THE BIOLOGICAL RESOURCES STUDY AREA

WILDLIFE		
Common Name	**Scientific Name**	**Status State/ Federal / BLM**
Mammals (cont.)		
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	CSC/__/BLM Sensitive
Big free-tailed bat	*Nyctinomops macrotis*	CSC/__/__
Burro deer	***Odocoileus hemionus eremicus***	**CPGS__/__**
Nelson's bighorn sheep	*Ovis canadensis nelson*	__/BLM Sensitive
Yuma mountain lion	*Puma concolor browni*	CSC/__/__
American badger	***Taxidea taxus***	**CSC/__/__**
Desert kit fox	***Vulpes macrotis arsipus***	**CPF/__/__**

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
FCT = Proposed for federal listing as a threatened species
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
WL = State watch list
CPF = California Protected Furbearing Mammal
CPGS = California Protected Game Species

Bureau of Land Management
BLM Sensitive = Species that require special management consideration to avoid potential future listing under the FESA and that have been identified in accordance with procedures set forth in BLM Manual 6840, the Special Status Species Management Manual for the Bureau of Land Management (Dec. 12, 2008).

SOURCE: CDFG, 2011

and one north of I-10 (Karl, 2013a). Under the PSEGS, an additional 4.6 acres of desert tortoise critical habitat are within the PSEGS BRSA and the Project Disturbance Area (Karl, 2013a). All habitats excluding developed, agriculture, and stabilized and partially stabilized desert dunes provide habitat for this species. Evidence from 2009, 2010 and 2013 surveys shows that few desert tortoise occupy the PSEGS site. Six live animals were found in the study area in spring, 2010, and other signs that indicate live animals were scarce. During Spring 2013 surveys, two recent burrows were found within buffer zones along the proposed gen-tie line reroute and one north of I-10 (Karl, 2013a).

Mojave Fringe-toed Lizard

Mojave fringe-toed lizard was fully described in PSPP PA/FEIS Section 3.23 (pp. 3.23-7 to 3.23-9), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, the Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats and is associated with creosote scrub throughout much of its range. This species is totally restricted to habitats of fine, loose, aeolian sand. Many local populations of Mojave fringe-toed lizard are small, with patches of sand supporting small populations of lizards. This fragmented pattern of distribution leaves the species vulnerable to local extirpation from additional habitat disturbance and fragmentation. Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will affect this species. Numerous Mojave fringe-toed lizards were found in the northeastern half of the PSPP BRSA during spring 2009 and 2010 surveys. A total of 117 individuals were observed within the Project Disturbance Area for the PSPP from 2009 and 2010, with an additional 62 observed within the buffer area. Nearly half of the Project Disturbance Area for the PSEGS contains suitable Mojave fringe-toed lizard habitat, including stabilized and partially stabilized sand dunes, some wash habitat, and other areas within Sonoran creosote bush scrub habitat with appropriate soils.

There were no observations of MFTL in the spring 2013 biological survey results of the PSEGS gen-tie line reroute and natural gas pipeline corridor. The natural gas pipeline corridor and gen-tie line reroute will not impact MFTL habitat (Karl, 2013a).

Couch's Spadefoot Toad

Couch's spadefoot toad was fully described in PSPP PA/FEIS Section 3.23 (pp. 3.23-9 to 3.23-10), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, Couch's spadefoot toad is found in a variety of plant communities, including desert dry wash woodland, shortgrass plains, creosote bush scrub, and alkali sink scrub with substrate capable of sustaining temporary breeding pools for at least nine days, and loose enough to permit burial in subterranean burrows. Breeding habitat includes temporary impoundments at the base of dunes as well as road or railroad embankments, temporary pools in washes or channels, pools that form at the downstream end of culverts, and playas. No Couch's spadefoot toads were observed during 2009 and 2010 surveys discussed in the PSPP PA/FEIS. Potential breeding habitat for the Couch's spadefoot toad was not observed in spring 2013 biological survey results of the PSEGS gen-tie line reroute and natural gas pipeline corridor (Karl, 2013a) and presumably was not observed in the area affected by the gen-tie line reroute, natural gas pipeline corridor. However, as discussed in the PSPP PA/FEIS, because of the short time this species is above ground, and because the surveys were not conducted during the proper season (i.e., after summer rains), the lack of observations does not suggest the species is absent from the project site. Couch's spadefoot toads could potentially occur wherever friable soils occur, and breeding habitat could occur wherever there is the potential for sustained ponding. Breeding ponds may occur off-site (such as the Palen Lake area) within adult dispersal distance (adult dispersal distances are unknown). The PA/FEIS determined that there is very limited potential for Couch's spadefoot toad breeding habitat on the project site.

Western Burrowing Owl

Western burrowing owl was fully described in PSPP PA/FEIS Section 3.23 (pp. 3.23-10 to 3.23-11), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, western burrowing owl inhabits arid lands throughout much of the western United States and is typically a year-round resident in much of California. Burrowing owls nest and roost in abandoned burrows, especially those created by California ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. In the Colorado Desert, western burrowing owls generally occur at low densities in scattered populations. Phase I through III protocol-level surveys of the PSPP Project Disturbance Area were conducted in spring and summer 2009, and a habitat assessment was completed in fall 2009. Most of the Project Disturbance Area was characterized as suitable western burrowing owl habitat. Two pairs with juveniles and four active burrows with sign were identified in the BRSA during 2009 and/or 2010 protocol surveys; of these, a total of four resident burrowing owls were observed within the Project Disturbance Area. Spring 2013 surveys of the PSEGS BRSA were conducted according to 2012 burrowing owl survey guidelines (CDFG, 2012), and identified one adult burrowing owl within the gen-tie line reroute buffer zone; preliminary 2013 survey findings report 10 owl detections on the site (Bloom Biological, 2013c).

Golden Eagle

Golden eagle was fully described in PSPP PA/FEIS Section 3.23 (pp. 3.23-11 to 3.23-12), and its occurrence in the project area has not changed since publication of the PSPP PA/FEIS (Bloom Biological, 2013a). It has, however, become a federal bird species of conservation concern (CDFG, 2011). As stated in the PSPP PA/FEIS and summarized here, golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. §668a - d, as amended). The USFWS issued in November 2009 an Environmental Assessment (EA) and Implementation Guidance for take permits under the Bald Eagle and Golden Eagle Protection Act. Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August, and this species is generally considered to be more common in southern California. Habitats include deserts, and they prefer to nest in rugged, open habitats with canyons and escarpments. In spring 2010 and 2013, golden eagle nest surveys were conducted according to the USFWS's February 2010 *Interim Golden Eagle Inventory and Monitoring Protocols*, covering the PSPP BRSA and a 10-mile radius (Bloom Biological, 2013a). The surveys found two active golden eagle nests within one territory, approximately 7 miles southwest of the project site in the Chuckwalla Mountains. Additionally, three inactive nests were located approximately 6 miles southwest of the site in the Chuckwalla Mountains; two of these nests were associated with the territory discussed above, the other is likely associated with a territory located further south of the proposed site. Golden eagle nest surveys were performed in winter and spring 2013 (Palen Solar Holdings, LLC, 2013b).

Winter 2013 Surveys

Winter Surveys involving the use of six baiting stations were performed in February 2013. A single sub adult was present all five weeks at Bait Station 6 located in the Palen Mountains north of the site, feeding on the carcass 2-3 days each week. No other golden eagles were observed during any of the six full-length survey sessions (Bloom Biological, Inc., 2013b).

Spring 2013 Surveys

No golden eagle nests were known from within the 10-mile radius of the PSEGS and also located within the Palen Mountains (Galati, 2013, citing BLM files). Surveys of the Palen Mountains from approximately 500 feet above ground level (agl) located three potential golden eagle nests. Two nests were inactive while the third was recently-active and over the decades probably has alternated usage between red-tailed hawks (RTHAs) and golden eagles (most recently by RTHAs). Several active and inactive RTHA territories were identified, all in cliffs (Bloom Biological, 2013a)).

The Chuckwalla Mountains were flown at greater than 1,500 feet agl (to avoid disturbing bighorn sheep during lambing season) for the purpose of viewing nest locations, locating eagles, and identifying and establishing a ground route that could be revisited by foot to verify the status of known nests and known nest cliffs. No physical signs of active golden eagle nesting activity (e.g., eagles, eagle white wash, fresh nest material, etc.) was observed at any of these sites (Id.). However, 1,500 feet agl is too great a height to provide any measure of certainty. No other potential eagle nest locations were examined in the Chuckwallas. One golden eagle nest slightly outside the 10-mile radius and on a prominent isolated cliff was determined to be inactive by direct visual observation from the helicopter. After several hours of morning observations in early April 2013, all other historic eagle nests appeared to be inactive, as verified by later ground surveys. Some of these were occupied by other avian species.

No eagle nests are known from the south end of the Coxcomb Mountains and also within the 10-mile radius buffer of the PSEGS (Id.). The portion of the Coxcomb Mountains (southern most end) within the 10-mile radius of the Project site and within Joshua Tree National Park was not surveyed by helicopter, but was examined from the ground. No golden eagle nests were detected.

The entire approximately 22-mile length of east-west trending DPV2 power lines within the Palen 10-mile radius survey area were surveyed by helicopter from less than 200 feet agl. While no golden eagle nests were found, nests of active RTHAs were abundant (Id.).

There is no suitable bald or golden eagle nesting habitat on the PSEGS site. The entire site is suitable golden eagle foraging habitat year-around, and bald eagles may fly over the area or may forage on the site during winter or migration seasons. The area covered during 2010 and 2013 surveys encompassed the PSEGS BRSA, and, because golden eagles often return to prior nesting locations, the surveys are adequate to identify and characterize golden eagle occurrences relative to the PSEGS.

Loggerhead Shrike

Loggerhead shrike was fully described in PSPP PA/FEIS Section 3.23 (pp. 3.23-12 to 3.23-13), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, loggerhead shrikes are uncommon residents throughout southern California but are more common in interior desert regions than along the coast. This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats where fences, posts, or other potential perches are typically present. The entire PSEGS Project Disturbance Area contains habitat for loggerhead shrike. This species, including an adult with fledglings, was observed on the PSPP site during 2009 and 2010 surveys. The species also was observed during spring 2013 avian field survey of the PSEGS, including along the gen-tie line route during burrowing owl surveys (Bloom Biological, 2013c; Galati, 2013).

Le Conte's Thrasher

Le Conte's thrasher was fully described in PSPP PA/FEIS Section 3.23 (p. 3.23-13), and its occurrence in the project area has not changed since publication of the PSPP PA/FEIS. It is, however, no longer a BLM Sensitive species (CDFG, 2011). As stated in the PSPP PA/FEIS and summarized here, Le Conte's thrasher is a resident in the Mojave Desert, occurring in desert flats, washes and alluvial fans with sandy and/or alkaline soil and scattered shrubs. It rarely occurs in monotypic creosote scrub habitat, because creosote bush is unable to support a nest; preferred nest substrate includes thorny shrubs and small desert trees. This species was observed in the PSPP BRSA during 2009 avian surveys, and during spring 2013 avian field surveys of the PSEGS (Bloom Biological, 2013c). Habitat for this species in the Project Disturbance Area is confined to desert dry wash woodland.

California horned lark

California horned lark was described in PSPP PA/FEIS Section 3.23 (p. 3.23-13), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. The California horned lark is found throughout most of California, preferring open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas. California horned lark was observed frequently in the Project Disturbance Area during 2009 and 2010 surveys and during spring 2013 avian field surveys of the PSEGS, including within the gen-tie line corridor and natural gas line alignment (Bloom Biological, 2013c; Blek, 2013). The project site contains habitat for this species, especially in creosote bush scrub.

Prairie Falcon

Prairie falcon was described in PSPP PA/FEIS Section 3.23 (pp. 3.23-13 to 3.23-14), and its occurrence in the project area has not changed since publication of the PSPP PA/FEIS. It has, however, become a federal bird species of conservation concern (CDFG, 2011). As stated in the PSPP PA/FEIS and summarized here, prairie falcon inhabits dry, open environments in the North American and is associated primarily with desert scrub areas, among other preferred habitat types. They require cliffs or bluffs for nesting though will sometimes nest in trees or on power line structures. Suitable nesting habitat may occur in surrounding mountains, but the BRSA does not provide it; however, the entire Project Disturbance Area contains suitable foraging habitat for this species. During 2009 and 2010 PSPP surveys, prairie falcons were observed several times both as flyovers and as perchers. During 2010 nest surveys, a pair of prairie falcons was documented in the Palen Mountains. Prior PSPP surveys are adequate to evaluate and characterize the PSEGS relative to the habitat needs of prairie falcon.

American Badger

American badger was described in PSPP PA/FEIS Section 3.23 (p. 3.23-14), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, badgers are an uncommon permanent resident of cold desert areas. The entire BRSA provides suitable foraging and denning habitat for badgers. Badger sign was found throughout the BRSA and five badger dens were found within the Project Disturbance Area during spring 2009 field surveys. No badgers were observed during 2013 surveys.

Desert Kit Fox

Desert kit fox was described in PSPP PA/FEIS Section 3.23 (pp. 3.23-14 to 3.23-15), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, desert kit fox is an uncommon to rare permanent resident of arid regions of the southern California deserts. Kit fox dens are used as shelter, escape, cover, and reproduction, and are vital to the survival of the species. Desert kit fox burrows, burrow complexes and scat were observed throughout the Study Area within desert wash and upland scrub habitats during spring 2009. Approximately 71 kit fox burrows and burrow complexes have been recorded on lands within the PSPP BRSA, mostly in the Project Disturbance Area, and during spring 2010 field surveys two kit fox complexes were found in the Project Disturbance Area and four more complexes in the buffer area. No kit fox dens were observed during spring 2013 surveys of the PSEGS BRSA (Karl, 2013a). The entire PSEGS BRSA provides habitat for desert kit fox.

In late 2011, the first known cases of canine distemper virus (CDV) were observed in desert kit foxes about 20 miles west of Blythe on public lands managed by the BLM and leased to Genesis Solar LLC for construction of the Genesis Solar Energy Project. At the time, CDFW believed that the outbreak originated from an infected host animal entering the site, possibly a wild or domestic dog, American badger, or other carnivore. The rapid spread of CDV within the kit fox population was facilitated by the project-related displacement of infected animals from the Genesis site into new kit fox territories. Subsequently, desert kit foxes were captured for disease testing at the First Solar Desert Sunlight, Solar Millennium Palen, Genesis Ford Dry Lake, and at SCE’s Colorado River Substation. CDV was identified at the two later sites, which span a distance of about 40 miles on the I-10 corridor within the Chuckwalla Valley (BLM, 2012, p. 4.4-15). The CDFW Wildlife Investigations Lab continues to monitor the health of desert kit foxes and is attempting to characterize the spread and significance of the disease on regional kit fox populations. To date, there has been no effort to test desert kit foxes in the PSEGS area for distemper.

Nelson’s Bighorn Sheep

Nelson’s bighorn sheep was described in PSPP PA/FEIS Section 3.23 (pp. 3.23-15 to 3.23-16), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, Nelson’s bighorn sheep includes bighorns from the Transverse Ranges through most of the desert mountain ranges of California, Nevada, northern Arizona to Utah. Essential habitat for bighorn sheep includes steep, rocky slopes of desert mountains, termed "escape terrain." Surface water is another element of desert bighorn habitat considered essential to population health. In the spring when annual plants are available, bighorn tend to disperse downhill to bajadas and alluvial fans to forage. Desert bighorn have a long lambing season that can begin in December and end in June in the Mojave Desert, and a small percentage of births commonly occur in summer. Over the past 140 years, bighorn sheep have suffered considerable population declines. Two metapopulations and nine demes of bighorn sheep occur within the NECO planning area, bighorn sheep disperse whenever forage and water conditions are suitable. No sign or evidence of Nelson's bighorn sheep were found during field surveys performed within the BRSA, but Nelson's bighorn sheep have been documented in mountain ranges to the north, west, southwest, and east of the site. Six rams were observed in the Coxcomb Mountains during Phase 2 golden eagle surveys in 2010. The BRSA does not occur in a known movement corridor, as identified in the NECO Plan, and the species was not observed during spring 2013 surveys of the PSEGS BRSA (Karl, 2013a). The NECO Plan also identifies I-10 as a barrier to bighorn sheep movement (BLM CDD, 2002). The PSEGS site is not currently an important movement corridor because of the presence of I-10 and the width of the valley between suitable bighorn sheep habitat. All vegetation communities within the PSEGS BRSA are considered suitable to support bighorn sheep.

Burro Deer

Burro deer was described in PSPP PA/FEIS Section 3.23 (p. 3.23-16), and its legal status and occurrence in the project area has not changed since publication of the PSPP PA/FEIS. As stated in the PSPP PA/FEIS and summarized here, burro deer is a subspecies of mule deer (*Odocoileus hemionus*) found within desert dry wash woodland communities in response to increases in water and forage. During spring 2009 and December 2009 field surveys, deer scat and tracks were observed in rocky substrate and deep washes including the western, central, and eastern desert washes that transect the project site. Deer sign was found within the washes and 150 foot-wide box culverts that convey the washes underneath I-10. Burro deer are known to use a culvert associated with the western-most project area wash to access a water source at a nearby orchard. Burro deer scat and tracks were observed in washes east of the PSEGS proposed gen-tie alignment and adjacent to I-10, and tracks were observed in the natural gas line extension buffer zone (Karl, 2013a). The entire PSEGS site provides habitat for burro deer.

Bats

The PSEGS site supports 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 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.

Other Special Status Wildlife

Table 3.23-2 lists other special status wildlife that were not detected and are not expected to occur in the PSEGS BRSA. These additional species were considered to have a lower potential for occurrence on the PSEGS site than the species discussed above because the general or micro-habitats known to support them were not found on the site, and/or because there are no known occurrences in the project vicinity.

TABLE 3.23-2
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Birds		
Bendire's thrasher *Toxostoma bendirei*	Bendire's thrashers are known in California from scattered locations in Kern, Inyo, San Bernardino, and Riverside Counties. This species is a summer resident in southeastern California, and arrives at breeding grounds from mid-March through May, and departs by late August. This species favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw, desert-thorn, or agave. The status of populations of this species is poorly understood, but threats are believed to be loss of habitat due to urbanization, harvesting of yucca and Joshua trees, overgrazing, and off-road vehicle activity. In parts of the range, grazing may increase habitat suitability by increasing the area with scattered junipers.	The desert dry wash vegetation community provides potential habitat for this species (141 acres), although this species was not observed during surveys. There are seven CNDDB (CDFW, 2013) within 30 miles of the project area, with two 2004 records from near Desert Center, approximately 3.0 miles west of the project site.
Black-tailed gnatcatcher *Polioptila melanura*	A year round resident in southwestern United States and central and northern Mexico, in California the black-tailed gnatcatcher is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Park south, and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo County. This species nests primarily in wooded desert wash habitat, but also occurs in creosote scrub habitat during the non-breeding season.	Based on a review of the vegetation community descriptions provided by the Applicant, the project site contains little, if any, of the dense scrub habitat preferred by this species. They are known from the area, including from McCoy Spring, Palen Valley, and Chuckwalla Well (Fitton, 2008). The closest occurrence based on the CNDDB (CDFW, 2013) is from 1977 and is approximately 14.2 miles east of the project site.
Crissal thrasher *Toxostoma crissale*	Crissal thrashers are non-migratory residents ranging from southern Nevada and southeastern California to western Texas and central Mexico. This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush. Nests of this species typically consist of an open cup of twigs, lined with finer vegetation, and are placed in the middle of a dense shrub.	Based on a review of the vegetation community descriptions provided by the Applicant, the project site contains little, if any, of the dense scrub habitat preferred by this species. They are known from the area, including from McCoy Spring, Palen Valley, and Chuckwalla Well (Fitton, 2008). The closest occurrence based on the CNDDB (CDFW, 2013) is from 1977 and is approximately 14.2 miles south of the project site.
Ferruginous hawk *Buteo regalis*	Ferruginous hawks do not breed in California, but are winter residents and in California are most common in grassland and agricultural areas in the southwest. Ferruginous hawks are found in open terrain from grasslands to deserts, and are usually associated with concentrations of small mammals. Threats to this species include loss of wintering habitat from urbanization and cultivation.	The project site contains suitable wintering habitat for this species. There are ten CNDDB (CDFW, 2013) records for this species in western Riverside County, and the nearest occurrence is more than 90 miles west of the project area (CDFW, 2013).
Gila woodpecker *Melanerpes uropygialis*	The Gila woodpecker's range is limited to a small area of southwestern United States and northwestern Mexico. In California, this species is found only along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers formerly were associated with desert washes extending up to 1 mile from the Colorado River; however, their range may be expanding.	In California, this species is currently known only from the Colorado River; therefore this species is not expected in the project site. The project site does not contain suitable nesting habitat for this species. The closest CNDDB (CDFW, 2013) record for this species is a 1986 record east of the project site at the Colorado River. Another was documented by the USFWS at the Rio Mesa project site in 2012.

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Birds (cont.)		
Gilded flicker *Colaptes chrysoides*	In California, the gilded flicker is known from the southeast; habitat includes stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. Until the mid-1990's, this species was considered a subspecies of northern flicker (*C. atratus*). This species nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. This species may be nearly extinct in California.	This species is not expected to regularly use the project site due to lack of suitable habitat. The closest CNDDB (CDFW, 2013) records for this species are along the Colorado River.
Mountain plover *Charadrius montanus*	Mountain plovers do not breed in California, but are winter visitors primarily from September to mid-March. In California they are found in the Central Valley, Antelope Valley, San Jacinto Valley, Imperial Valley, and Palo Verde Valley. Mountain plover habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas, though use of these areas is suspected to be because of loss of native grassland and playa habitats.	This species may use the dry lakebed and nearby agricultural areas as winter habitat. The closest CNDDB (CDFW, 2013) record for this species is in Imperial County at the southern end of the Salton Sea.
Northern harrier *Circus cyaneus*	In western North America, the northern harrier breeds from northern Alaska south to Baja California, Mexico. This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	The project site contains suitable wintering habitat for the northern harrier, and this species was observed during project site surveys (Solar Millennium, 2009). There are CNDDB (CDFW, 2013) nesting records for this species in eastern Riverside County.
Peregrine falcon *Falco peregrines*	The Peregrine falcon's year-round range includes coastal and northwestern California and the Sierra Nevada and other California mountains. Additionally, this species winters inland throughout the Central Valley and in northeastern California. They are rare in the arid southeast, but they occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging, and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures.	This species may forage on the project site and nest in nearby mountains, but was not observed on the project site during project surveys. There are no CNDDB (CDFW, 2013) records for Riverside County.
Purple martin *Progne subis*	The historical breeding range of the purple martin includes southern California, though populations have shrunk dramatically. Neither the historical or current breeding range, however, includes the Colorado Desert. Purple martins habitat requirements include adequate nest sites and availability of large aerial insects, and therefore are most abundant near wetlands and other water sources. Threats to this species include loss of large tree and snags and competition from European starlings.	This species was observed migrating through the project site, but is not expected to extensively use the project site. There are six CNDDB (CDFW, 2013) records for this species from western Riverside County, the most recent of which include nesting records from 1984 and 1993.
Short-eared owl *Asio flammeus*	Short-eared owls breed through much of northern North America, and are year-round residents in some areas of California. Historically, this species occurred throughout much of California, west of the southern deserts, in low numbers. Currently, small populations breed in regularly in the Great Basin and in the Sacramento/San Joaquin River Delta area, but sporadically in other parts of its former range. Short-eared owls require open country that supports small mammal populations, and that also provides adequate vegetation to provide cover for nests.	The project site contains suitable wintering habitat for the short-eared owl. Although this species was not observed during surveys for the project, it was observed during surveys for a nearby proposed energy facility immediately west of the McCoy Mountains. There are no Riverside County CNDDB (CDFW, 2013) records for this species.

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Birds (cont.)		
Short-eared owl *Asio flammeus* (cont.)	This includes salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures.	
Swainson's hawk *Buteo swainsoni*	Swainson's hawks require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in nonnative trees, such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands. While there are historical breeding records of this species from the Colorado Desert, this species now is known from southern California only as a spring and fall migrant. This reduction in breeding range is believed to be from loss of nesting habitat	The project site may provide foraging habitat for migrating individuals, and this species was observed in the project site during surveys. There are no CNDDB (CDFW, 2013) records for nesting Swainson's hawks in Riverside County.
Vaux's swift *Chaetura vauxi*	This species is not known to breed in Riverside County or elsewhere in southern California. Very few nests have been found so their breeding range has been inferred from sightings of birds flying over potential nesting areas during their nesting season, in June and July. Vaux's swifts prefer to nest in the hollows formed naturally inside of large old conifer trees, especially snags, which are entirely lacking from the project site.	This species was observed during surveys, but occurrences are expected to be of migrants, only.
Vermilion flycatcher *Pyrocephalus rubinus*	Vermilion flycatchers are rare breeders or residents in localized areas of southern California, including along the Colorado River. They are usually found near water in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodlands; nesting substrate includes cottonwood, willow, and mesquite.	Within the project vicinity, occurrences of this species are limited to the Colorado River. This species is not expected in the project site. The closest CNDDB (CDFG, 2013) records include a 1983 record from the Blythe golf course.
Yellow warbler *Dendroica petechia*	Yellow warblers historically bred throughout much of California except for high elevations, the Colorado Desert, and most of the Mojave Desert. Breeding abundance for this species has declined in much of California, as has the breeding range, especially in the Central Valley and parts of Owens Valley. In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. Currently, this species no longer breeds in much of the Riverside County segment of the lower Colorado River Valley. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter.	This species was not observed during surveys, and is not expected to nest in the project site due to lack of suitable habitat. The closest extant CNDDB (CDFW, 2013) records for this species are two 1986 records east of the project site at the Colorado River.
Yellow-breasted chat *Icteria virens*	The yellow-breasted chat occurs as a summer resident and migrant in California. In the southeastern California, the yellow-breasted chat breeds primarily in scattered locations in Owen's Valley and the Mojave, from the Salton Sea, and from the lower Colorado River Valley. This species occupies shrubby riparian habitat with an open canopy, and will next in non-native species, including tamarisk. Threats to this species include loss of riparian habitat, and, it is suspected, pressure from cowbird parasitism.	In this region, this species is associated with the Colorado River only. The project site does not contain suitable habitat for this species. CNDDB (CDFW, 2013) records in the region are associated with the Salton Sea or the Colorado River. The closest CNDDB records for this species are two 1986 records east of the project site at the Colorado River.

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Birds (cont.)		
Yuma clapper rail *Rallus longirostris yumanensis*	The Yuma clapper rail occurs in inland areas in the southwestern United States. This subspecies is partially migratory, with many birds wintering in brackish marshes along the Gulf of California. Some remain on their breeding grounds throughout the year; for example, the Salton Sea (south) Christmas Bird Count frequently records this species in the fresh-water marshes in and around the Imperial Wildlife Area (Wister Unit). The Yuma clapper rail is unique among the clapper rails in being the only one that occupies fresh-water marshes during the breeding seasons yet largely winters in brackish marshes south of the United States.	Nesting and foraging habitat for the Yuma clapper rail occurs only along the Lower Colorado River (from Topock Marsh southward) and around the Salton Sea. A rail was detected at the Desert Sunlight Solar Farm, and rails may occasionally migrate though the project area.
Mammals		
Arizona myotis *Myotis occultus*	This species has been found from southeastern California through Arizona, New Mexico, and south into Chihuahua, Mexico. Arizona myotis is most commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California.	This species is not expected to occur due to lack of coniferous forests and low elevation of the Study Area. The closest record is a historical occurrence from 1945 approximately ten miles south of the Study Area near the town of Ripley (PSPP PA/FEIS, p. 3.23-21).
Arizona myotis *Myotis occultus*	This species has been found from southeastern California through Arizona, New Mexico, and south into Chihuahua, Mexico. Arizona myotis is most commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California.	This species is not expected to occur due to lack of coniferous forests and low elevation of the Study Area. The closest record is a historical occurrence from 1945 approximately ten miles south of the Study Area near the town of Ripley (PSPP PA/FEIS, p. 3.23-21).
Big-free tailed bat *Nyctinomops macrotis*	This species ranges from most of South America northward to include Mexico, Arizona, New Mexico, southern and western Texas, southern California, southeastern Nevada, southern Utah, and north and western Colorado from generally sea level to 8,000 feet in elevation. This species occurs in desert shrub, woodlands, and coniferous forests. It roosts mostly in the crevices of rocks although big free-tailed bats may roosts in buildings, caves, and tree cavities	This species has the potential to roost and forage within the project area. The nearest occurrences for this species in Riverside County are from the vicinity of Palm Springs and Joshua Tree National Park (CDFW, 2013). A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010).
California leaf-nosed bat *Macrotus californicus*	California leaf-nosed bat is a species of concern and a BLM Sensitive species; it is covered under the NECO plan. California leaf-nosed bats occur in the deserts of California, southern Nevada, Arizona and south to northwestern Mexico. In California, they now are found primarily in the mountain ranges bordering the Colorado River Basin. In California, the two largest roosts (each sheltering 1,500 bats during winter months) are in mines in extreme southeastern California. This species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM CDD, 2002). Radio-telemetry studies of Macrotus in the California desert show that the California leaf-nosed bat forage almost exclusively among desert wash vegetation within 10 km of their roost (WBWG, 2005).	All habitats within the Project Disturbance Area are suitable habitats for this species. A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010). There are several CNDDB records in the vicinity of the Study Area. The nearest record is from 1993 near the McCoy Mountains area approximately 14.0 miles northwest of the project, in creosote bush scrub habitat where approximately 300 adults were observed roosting in 1993 and 100 were observed during outflight in 1997 (CDFW, 2013).

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Mammals (cont.)		
Cave myotis *Myotis velifer*	The cave myotis occurs from western Texas, to southern Nevada, southeastern California (only along the Colorado River), southward into Mexico, and is also widely distributed in Arizona. This species is found primarily at lower elevations (the Sonoran and Transition life zones) of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a “cave dweller” and caves are the main roosts although this species may also use mines, buildings, and bridges for roosts.	This species has a potential to occur within the Study Area, more likely as a foraging species than a roosting bat species. The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe where individual bats of this species were detected acoustically during April 2002 (CDFW, 2013).
Colorado Valley woodrat *Neotoma albigula venusta*	This species occurs from southern Nevada, southeastern California, northeastern Baja California, to western Arizona. Colorado Valley woodrats are found in a variety of habitats including low desert, pinyon-juniper woodlands, and desert-transition chaparral. Suitable habitat elements for this species include washes where organic debris gathers, areas of prickly pear cactus and mesquite, rocky areas, and crevices in boulders which are used for cover and nest sites.	This species is not expected to occur at the project site due to coarse soils and disturbance of the site from past agricultural activities. The nearest CNDDB occurrence is a 2001 record near Corn Springs campground, located approximately 5.1 miles south of the project (CDFW, 2013).
Hoary bat *Lasiurus cinereus*	Hoary bat is the most widespread of North American bats and is highly associated with forested habitats in the west. Hoary bat roosts usually are located at the edge of a clearing, although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, building sides, and in dried palm fronds on palm trees.	This species may occur in the area as forage and roost habitat occurs within the project area. The closest CNDDB (CDFW, 2013) record is a historical 1919 occurrence approximately 23.6 miles east of the project area in the town of Neighbors. A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010).
Pallid bat *Antrozous pallidus*	The pallid bat is a California species of concern and a BLM Sensitive species that is covered under the NECO plan. Pallid bats inhabit low elevation (less than 6,000 feet) rocky, arid deserts and canyonlands, shrub/steppe grasslands, but also occur in higher elevation coniferous forests, greater than 7,000 feet in elevation. This species is most abundant in xeric landscapes including the Great Basin, Sonoran, and Mojave deserts (WBWG, 2005). Pallid bats are known from Cuba, Mexico, and throughout the southwestern and western United States. Population trends are not well known, but there are indications of decline. Pallid bats roost alone, in small groups (2 to 20 bats), or gregariously (100s of individuals). Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees with exfoliating bark, and various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG, 2005).	This species has a potential to roost and forage within the project area. A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010). The nearest CNDDB record is approximately 4.2 miles southeast of the project site (CDFW, 2013).

**TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA**

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Mammals (cont.)		
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Pocketed free-tailed bat is a California species of concern. This species occurs in western North America, from southern California, central Arizona, southern New Mexico, western Texas, south into Mexico and Baja, California (WBWG, 2005). Despite only a limited number of records, pocketed free-tailed bats are known to occur in the desert from March through August, when they then migrate out of the area. In California, they are found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons.	This species has a potential to roost and forage within the project site based on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record for this species is from 2002 near the I-15 bridge over the Colorado River in Blythe. Individual bats of this species were detected acoustically during April 2002 (CDFG, 2013). A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010).
Spotted bat *Euderma maculatum*	This species is known from all the states west of and including Montana, Wyoming, Colorado, New Mexico and Texas. Although broadly distributed, this species is rarely common, but may occur locally from southern British Columbia, northern Arizona, Arizona/Utah border, and western Texas from below sea level to 8,100 feet above mean sea level. Spotted bats occur in arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a necessary feature for roosting.	This species has a potential to roost and forage within the project site based on what is understood of its habitat requirements and roosting habits. The nearest CNDDB record is a historical occurrence from 1907 in the Colorado Desert near Mecca (CDFW, 2013). A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010).
Townsend's big-eared bat *Corynorhinus townsendii*	This species has been reported in a wide variety of habitat types ranging from sea level to approximately 9,000 feet above MSL. Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats.	This species has a potential to forage within the Study Area, although roosting is unlikely to occur since cave and abandoned buildings do not occur within the Study Area. A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010).
Western mastiff bat *Eumops perotis*	The subspecies that occurs in North America, *E. p. californicus*, ranges from central Mexico across the southwestern United States including parts of California, southern Nevada, Arizona, southern New Mexico and western Texas. Recent surveys have extended the previously known range to the north in both Arizona with several localities near the Utah border and California. It is found in a variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high elevation meadows of mixed conifer forests. Surveys in northern Arizona have documented roosts at approximately 3,600 feet elevation and foraging bat species at 7,500 feet above MSL (WBWG, 2005).	The project site does not support suitable roosting habitat for western mastiff bat but this species may utilize the Study Area for foraging. The nearest CNDDB record is approximately 4.2 miles southwest of the Study Area (CDFW, 2013). A single bat of an unidentified species was observed roosting beneath a bridge near Corn Springs Road near the location of the proposed substation during December 2009 surveys (AECOM, 2010).

TABLE 3.23-2 (Continued)
SPECIAL-STATUS WILDLIFE WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE PROJECT STUDY AREA

Species	Habitat Requirements and Geographic Range	Potential to Occur or Presence On Site
Mammals (cont.)		
Yuma myotis *Myotis yumanensis*	This species ranges across the western third of North America from British Columbia, Canada, to Baja California and southern Mexico. Yuma myotis is usually associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects, but Yuma myotis also use tinajas in the arid west. It occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. The species roosts in bridges, buildings, cliff crevices, caves, mines, and trees.	This species has a potential to roost and forage within the project site. The nearest CNDDB record is from 2002 near the Blythe bridge over the Colorado River where individual bats of this species were detected acoustically during April 2002 (CDFW, 2013).
Yuma mountain lion *Puma concolor browni*	In the NECO planning area, mountain lions primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well-developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Mountain lions are restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River. Burro deer, the primary prey item, are known to spend the hot summer and fall in riparian areas along the Colorado River and in dense microphyll woodlands near the Coachella Canal.	Mountain lion likely use the Study Area, but no definitive sign for this species was observed during 2009 spring surveys.

CHAPTER 4
Environmental Consequences

4.1 Introduction

This chapter includes analyses of environmental consequences or impacts that would result from implementation of the PSEGS and alternatives described in Chapter 2, *Proposed Action and Alternatives*. The direct and indirect effects of Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A are analyzed in the PSPP PA/FEIS, and much of that analysis remains valid. Accordingly, this chapter focuses primarily on impacts that could result from the PSEGS. To the extent that new information or circumstances warrant revision to the impact analysis presented in the PSPP PA/FEIS, it is included here. For example, the range of cumulatively considerable projects has changed since publication of the PSPP PA/FEIS. As such, this Chapter 4 includes analyses of cumulative impacts for the PSEGS and the alternatives that have been carried forward from the PSPP PA/FEIS. Unless otherwise indicated, analyses of the direct and indirect impacts of alternatives contained in the PA/FEIS are assumed to remain valid and are not replicated here. Existing environmental conditions for assessing the potential environmental impacts are primarily described in the PSPP PA/FEIS and supplemented in Chapter 3 of this Draft SEIS, as necessary, to reflect the types of information and changed circumstances referenced above.

The methodology for the impact assessment contained in the following sections conforms with the guidance found in the BLM's NEPA Handbook H-1790-1 (January 2008) as well as the applicable CEQ regulations for implementing NEPA: (i.e., 40 CFR Section 1502.24, *Methodology and Scientific Accuracy*; 40 CFR Section 1508.7, *Cumulative Impacts*; and 40 CFR Section 1508.8, *Effects*). The CEQ regulations require agencies to "rigorously explore and objectively evaluate" the impacts of the alternatives. This chapter discusses short-and long-term direct, indirect and cumulative impacts of the PSEGS and alternatives; identifies mitigation measures where appropriate to address adverse impacts; and summarizes residual and unavoidable adverse impacts, if any, on an issue-by-issue basis. Where used in this analysis, the word "significantly" is intended strictly to mean the legal term of art defined in NEPA (40 CFR §1508.27; BLM NEPA Handbook Section 7.3).

Section 4.1, *Introduction*, describes the analytical assumptions relied upon in analyzing the environmental consequences of the PSEGS and alternatives (Section 4.1.1) and defines the types of effects that may result (Section 4.1.2). It also describes the projects and approach used for the cumulative scenario (Section 4.1.3), the mitigation measures identified to address adverse impacts on the resources and issue areas analyzed (Section 4.1.4), and the general terms and conditions required for all public land ROWs (4.1.5). Section 4.1.6 summarizes the potential for the PSEGS and alternatives to have significant irreversible effects on the environment. Finally, Section 4.1.7 describes the relationship between the short-term use of the environment and the maintenance and enhancement of long-term productivity.

4.1.1 Analytical Assumptions

The following impacts analyses were conducted with the following assumptions:

1. The laws, regulations, and policies applicable to BLM authorizing ROW grants for renewable energy development facilities would be applied consistently for all action alternatives.

2. The proposed facility would be constructed, operated, maintained and decommissioned as described in each action alternative.

3. Short-term impacts are those expected to occur during the construction phase and the first 5 years of the operation and maintenance phase, as well as the end-of-project-life decommissioning phase. Long-term impacts are those that would occur after the first 5 years of operation.

4.1.2 Types of Effects

The potential impacts from those actions that would have direct, indirect, and cumulative effects were considered for each resource. Effects and impacts as used in this document are synonymous and could be beneficial or detrimental (40 CFR §§1508.7, 1508.8; BLM NEPA Handbook Section 6.8).

Direct effects are caused by the action and occur at the same time and place as the action; indirect effects are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable. Residual effects are effects that remain after mitigation measures have been applied. Cumulative impacts are those effects resulting from the incremental impacts of an action when combined with other past, present, and reasonably foreseeable future actions (regardless of which agency or person undertakes such actions). Cumulative impacts could result from individually insignificant but collectively significant actions taking place over a period of time.

4.1.3 Cumulative Scenario Approach

This Draft SEIS analyzes the cumulative impacts of the construction, operation and maintenance, closure and decommissioning of the PSEGS and alternatives within the ROW application area, taking into account the effects in combination with past, present and reasonably foreseeable future actions. The cumulative effects analysis highlights past actions that are closely-related either in time or space (i.e., temporally or in geographic proximity) to the PSEGS and alternatives that could have ongoing impacts that could interact with those of other projects, present actions the review of which is in progress at the same time this Draft SEIS was being prepared; and reasonably foreseeable future actions, including those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends. This information represents an update to the cumulative scenario presented in the PSPP PA/FEIS.

The intensity, or severity, of the cumulative impacts analysis considers the magnitude, geographic extent, duration and frequency of the effects (CEQ, 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent or chronic (CEQ, 1997). Varying degrees of information exist about projects within the cumulative scenario. Therefore, for resource areas where quantitative information is available, a quantitative analysis is provided. By contrast, where quantitative information is not available, a qualitative analysis is provided. Consistent with BLM Handbook, if the PSEGS and alternatives would have no direct or indirect effects on a resource, resource use or program area, the Draft SEIS does not analyze potential cumulative effects related to that issue.

The cumulative scenario includes projects identified in Table 4.1-1, *Cumulative Scenario*, and shown in Figure 4.1-1. Table 4.1-1 identifies the following for each resource, resource use or BLM program area: the cumulative assessment impact area (i.e., the geographic scope for the corresponding resource, resource use, or BLM program area); elements to consider; BLM renewable energy projects; other BLM authorized actions; and other known actions or activities within the geographic scope that are not under BLM's jurisdiction. Most of the actions and projects listed have undergone, are undergoing, or would be required to undergo their own independent environmental review under NEPA or CEQA or both, as applicable.

The specific area within which cumulative effects could occur varies by resource. Accordingly, the geographic scope of analysis in each instance is based on the natural boundaries of the resource affected by the PSEGS or alternatives, rather than jurisdictional boundaries. In addition, each project in a region would have its own implementation schedule, which may or may not coincide or overlap with the PSEGS's schedule. This is a consideration for short-term impacts from the project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the PSEGS.

Renewable Energy Projects Included in the Cumulative Scenario

A large number of renewable projects have been proposed on BLM-administered land, state land, and private land in California. As of May 2013, there were approximately 106 renewable projects proposed in California in various stages of environmental review or under construction. Solar, wind, and geothermal development applications have requested use of BLM-administered land, including approximately one million acres of the California desert. State and private lands have also been targeted for renewable energy projects. In addition, approximately 69 applications for solar and wind projects on BLM-administered land are currently being considered (BLM, 2013). BLM's energy projects in the California Desert District are identified in Table 4.1-2.

TABLE 4.1-1
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Air Resources	Mojave Desert Air Basin	PM2.5, PM10, ozone	Western Kern County, Los Angeles County, San Bernardino County, and Eastern Riverside County projects including, Blythe Energy Project, Blythe Energy Project Trans-mission Line, Blythe PV Project, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Airport Solar I Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight, Desert Harvest Project, Gypsum Solar, Palo Verde 2, Eagle Mountain, Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Western Kern County, northeastern Los Angeles County, San Bernardino County, and Eastern Riverside County projects, including, Recreational Opportunities, Devers-Palo Verde 2 Trans-mission Line Project, Desert Southwest Trans-mission Line, Eagle Mountain Landfill Project, etc.	Chuckwalla Valley State Prison, Ironwood State Prison, Devers-Palo Verde 1 Transmission Line, Eagle Mountain Pumping Plant, Kaiser Mine, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Colorado River Substation Expansion, Eagle Mountain Pumped Storage Project, Red Bluff Substation, RCL00161R1 (Reclamation Plan), BGR100258, CUP03602, CUP03677
Climate Change	International, national and regional	CO_2e	All Projects		
Cultural Resources	Cultural sites, traditional use areas, and cultural landscapes to the extent they exist within the requested ROW for the solar field, gen-tie line, communications line, and natural gas line; as well as in the general vicinity of the site, including along the I-10 corridor	Ground-disturbing activities and the cultural character of the site and its vicinity Cultural resources, including archaeological (prehistoric and historic), and ethnographic resources	Blythe Energy Project, Blythe Energy Project Transmission Line, Blythe PV Project, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Airport Solar I Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight, Desert Harvest Project, Gypsum Solar, Palo Verde 2, Eagle Mountain, Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Devers-Palo Verde 2 Trans-mission Line Project, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, etc.	Chuckwalla Valley State Prison, Ironwood State Prison, Devers-Palo Verde 1 Transmission Line, Eagle Mountain Pumping Plant, Kaiser Mine, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, 15 residential developments, Colorado River Substation Expansion, Eagle Mountain Pumped Storage Project, Red Bluff Substation, RCL00161R1 (Reclamation Plan), BGR100258, CUP03602, CUP03677, etc.
Lands and Realty	Eastern Riverside County	Designated utility corridors (e.g., transmission lines, cellular telephone towers, poles), existing ROWs, I-10	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, Devers-Palo Verde 1 Transmission Line, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Mineral Resources	All areas potentially underlain by construction-grade aggregate resources	Designated aggregate resource areas, extent and availability of aggregate.	All projects		
Multiple Use Classes	CDCA Plan areas bearing the multiple use class designation "Moderate"	Restriction or preclusion of otherwise allowable use opportunities	All BLM Renewable Energy Projects located on desert public lands classified MUC-M within Imperial County, Kern County, King County, Los Angeles County, Riverside County, San Bernardino County, San Diego County		
Noise	See Figure 4.9-1 Noise Measurement Locations and Noise Contours	Equipment, motor vehicles, high pressure steam blow	None		
Paleontological Resources	Eastern Riverside County	Ground-disturbing activities; rock units with potential high sensitivity or known paleontological resources	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.
Public Health and Safety					
Hazardous materials/ hazardous waste	Mojave Desert Air Basin, watershed, groundwater basin, with focus on and in the vicinity of the site	Releases, spills, emissions, bacteria; ground disturbance that exposes existing subsurface conditions; engineering and administrative controls; health risks	See Air Resources, above; see also, Water Resources, below, in this Table 4.1-1.		
Waste management	California Desert, with emphasis on Riverside County	Solid and liquid wastes	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Public Health and Safety (cont.)					
Transmission line safety and nuisance	Immediate vicinity of the proposed gen-tie line	Interference with radio-frequency communication; noise; fire hazards; hazardous shocks; nuisance shocks; and electric and magnetic field (EMF) exposure	Blythe Energy Project Transmission Line, Desert Quartzite, Chuckwalla Solar I, Blythe Energy Project, Blythe Energy Project Transmission Line, Desert Southwest Transmission Line, etc.	Devers-Palo Verde Transmission Line, Colorado River Substation and Expansion	Interstate 10
Aviation safety	Air space governed by the Blythe Airport Land Use Compatibility Plan	Navigable airspace; reflectivity and temporary flash occurrences; radio frequency emissions and potential interference; thermal plumes; height and location of structures; clear space within Compatibility Zone D; bird strike and avian-aviation incompatibilities	All Projects		
Traffic and transportation safety	Public Access/OHV: designated open routes in the CDCA Transportation: I-10 corridor	Public Access/OHV: Temporary and permanent closure of OHV routes that adversely affect off-highway public access opportunities Transportation: Equipment that exceeds roadway load or size limits; hazardous materials transport	Same as Cultural Resources, above.		
Worker safety and fire protection	Project site and linear facilities corridor; jurisdictional boundary of the Riverside County Fire Department (RCFD) plus mutual aid agencies	Site access; fire response; hazardous materials response; advanced life support/paramedic services; disaster preparedness	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	, Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.
Geologic hazards	Project site and linear facilities corridor	Accelerated and/or environmentally harmful soil erosion; corrosive soils; earthquake fault ruptures; earthquake induced ground deformations (e.g. lateral spreading, subsidence, liquefaction, or collapse), or otherwise unstable soils; landslides	Blythe Energy Project Transmission Line, Colorado River Substation and Expansion, Desert Quartzite, Chuckwalla Solar I, Blythe Energy Project Transmission Line, Desert Southwest Transmission Line	Devers-Palo Verde Transmission Line, Blythe Energy Project	Interstate 10

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Public Health and Safety (cont.)					
Recreation	California Desert, with emphasis on eastern Riverside County	Dispersed recreational opportunities and experiences, ACECs, LTVAs	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.
Social Economic Considerations	Social: Eastern Riverside County Economic: Populated areas within a 2-hour commute distance of the PSEGS	Flow of goods and services; impacts to local infrastructure and services; ability to meet housing demand; employment/labor demand; possible positive impacts to regional economic sectors and/or adverse community impacts; severance or other tax benefits; ability of communities to absorb impacts	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.
Soil Resources	Mojave Desert Air Basin and watershed	Erosion	See Air Resources, above; see also, Water Resources, below, in this Table 4.1-1.		
Special Designations	Wilderness Areas within sight or hearing distance of the site (i.e., McCoy, Big Maria Mountains and Little Chuckwalla Mountains Wilderness Areas); more generally, the I-10 corridor	Views, glint, glare, noise, recreation	See related resource sections in this Table 4.1-1.		
Transportation and Public Access	Transportation: Eastern Riverside County, focusing on the I-10 corridor. Public Access: NECO Plan area.	Construction traffic – materials and workers OHV recreation opportunities, changes in viewscape, unauthorized routes	I-10 Corridor: Same as Cultural Resources, above. NECO Plan Area: including Genesis, Chuckwalla, First Solar/Desert Sunlight, etc.; see also cumulative projects identified for Vegetation Resources, below.		

TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Public Health and Safety (cont.)					
Vegetation Resources	NECO Plan area.	Ephemeral drainages and natural communities; special status plants; stabilized and partially stabilized dunes and sand transport corridors; invasive plants	Blythe Energy Project, Blythe Energy Project Trans-mission Line, Blythe PV Project, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Airport Solar I Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight, Desert Harvest Project, Gypsum Solar, Palo Verde 2, Eagle Mountain, Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Devers-Palo Verde 2 Trans-mission Line Project, Desert Southwest Trans-mission Line, Eagle Mountain Landfill Project, etc.	Chuckwalla Valley State Prison, Ironwood State Prison, Devers-Palo Verde 1 Transmission Line, Eagle Mountain Pumping Plant, Kaiser Mine, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Colorado River Substation Expansion, Eagle Mountain Pumped Storage Project, Red Bluff Substation, RCL00161R1 (Reclamation Plan), BGR100258, CUP03602, CUP03677, etc.
Visual Resources	I-10 corridor**.**	PSEGS appearance; construction-related dust, light, glint and glare; views from key observation points	Blythe Energy Project, Blythe Energy Project Trans-mission Line, Blythe PV Project, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Airport Solar I Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight, Desert Harvest Project, Gypsum Solar, Palo Verde 2, Eagle Mountain, Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Devers-Palo Verde 2 Trans-mission Line Project, Desert Southwest Trans-mission Line, Eagle Mountain Landfill Project, etc.	Chuckwalla Valley State Prison, Ironwood State Prison, Devers-Palo Verde 1 Transmission Line, Eagle Mountain Pumping Plant, Kaiser Mine, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Colorado River Substation Expansion, Eagle Mountain Pumped Storage Project, Red Bluff Substation, RCL00161R1 (Reclamation Plan), BGR100258, CUP03602, CUP03677, etc.
Water Resources					
Surface water	Watershed	Hydrology and quality	Blythe, Nextera McCoy, Desert Quartzite, Associated Gen-tie Trans Lines	Colorado River Substation, Devers-Palo Verde 2 Trans-mission Line Project, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, etc.	First Solar Blythe, Blythe Airport Solar 1

**TABLE 4.1-1 (Continued)
CUMULATIVE SCENARIO**

Resource or BLM Program	Cumulative Analysis Impact Area	Elements to Consider	BLM Renewable Energy Projects	Other BLM Authorized Actions	Other Known Actions/Activities
Water Resources (cont.)					
Groundwater	Palo Verde Mesa Groundwater Basin	Basin balance, levels and quality	Blythe, Nextera McCoy, Desert Quartzite,	Colorado River Substation, Devers-Palo Verde 2 Trans-mission Line Project, Desert Southwest Transmission Line, Eagle Mountain Landfill Project, etc.	First Solar Blythe, Blythe Airport Solar 1
Wildland Fire Ecology	Eastern Riverside County	Mortality of plants and wildlife, loss of forage and cover; changes to the vegetation communities; spread of invasive plants; consequences of subsequent extreme weather events; air quality	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.
Wildlife Resources	Recovery Plan Area defined by NECO; Critical Habitat Unit defined by USFWS/CDFW existing range or eastern Riverside County	Desert Tortoise, Mojave fringe-toed lizard, Couch's spadefoot toad, migratory birds, golden eagle, western burrowing owl, American badge, kit fox, Nelson's big horn sheep. Also, mortality and injury; special status wildlife; wildlife movement and connectivity; indirect impacts, including from lighting, collisions and climate change.	Desert Harvest Solar Farm, Desert Sunlight Solar Farm, Genesis Solar Energy, McCoy Solar Energy, Rice Solar Energy, Rio Mesa Solar, Mountain View Power Partners Novation/REC, Wind Power Partners 1993, enXco McCoy, Genesis Solar, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Solar Power Project, Desert Quartzite, Desert Sunlight; Gypsum Solar; Palo Verde 2; Eagle Mountain; Desert Center II, Rio Mesa Solar Electric Generating Facility, etc.	Recreational Opportunities, Blythe Energy Project Trans-mission Line, Eagle Mountain Pumped Storage Project, Eagle Mountain Landfill Project, etc.	Interstate 10, Chuckwalla Valley State Prison, Ironwood State Prison, Blythe Energy Project, Eagle Mountain Pumping Plant, Kaiser Mine, Blythe PV Project, Chuckwalla Valley Raceway, Intake Blvd. Shell Station, Three Commercial Projects, Intake Shell, Fifteen residential developments, Blythe Airport Solar I Project, etc.

TABLE 4.1-2
RENEWABLE ENERGY PROJECTS IN THE CALIFORNIA DESERT DISTRICT

BLM Field Office	Number of Projects & Acres	Total MW
Solar Energy		
Bakersfield	1 project 1,509 acres	150 MW
Barstow Field Office	6 projects 44,076 acres	3,864 MW
El Centro Field Office	8 projects 4,935 acres	1,315 MW
Needles Field Office	2 projects 5,471	670 MW
Palm Springs Field Office	16 projects 87,820 acres	6,040 MW
TOTAL – CA Desert District	***32 projects 142,302 acres***	***11,889 MW***
Wind Energy		
Barstow Field Office	2 projects 8,806 acres	141 MW
El Centro Field Office	5 projects 39,210 acres	501 MW
Needles Field Office	6 projects 145,331 acres	n/a
Palm Springs Field Office	5 projects 56,116 acres	n/a
Ridgecrest Field Office	19 projects 528,630 acres	848 MW
TOTAL – CA Desert District	***37 projects 778,093 acres***	1,490 MW

SOURCE: Based on the BLM Solar Applications and Authorizations as of May 2013 and projects listed in the BLM California Field Office Alternative Energy Website as of May 2013.

Solar, wind and geothermal energy projects identified as being on State and private lands that also are considered by the BLM are identified in Tables 4.1-3 through 4.1-5. As shown in these tables, there are 86 solar projects that total 14,723 MW; 69 new wind projects and repowering projects that total 9,150.36 MW; and 24 geothermal projects that total 1,556.6 MW. Proposed solar energy projects within BLM's cumulative scenario also are shown in Table 4.1-1, above.

TABLE 4.1-3
SOLAR ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Solar Projects – 86 Projects (14,723.05 MW)		
Bethel Solar X Hybrid (30 MW solar, 30 MW biomass)	Imperial County	Complete
Campo Verde Solar (140 MW)	Imperial County	Approved
Centinela Solar (170 MW solar PV)	Imperial County	Under Construction
Chocolate Mountain Solar Farm (49.9 MW solar PV)	Imperial County	Under Environmental Review
Imperial Solar Energy Center South (250 MW)	Imperial County	Under Construction
Imperial Solar Energy Center West (200 MW)	Imperial County	Under Construction
Ocotillo Sol (18 MW)	Imperial County	Under Environmental Review
Solar Gen 2 Solar Array (150 MW)	Imperial County	Approved
Antelope Valley Solar Project by Renewable Resources (650 MW)	Kern County	Approved
Astoria Solar Project by RE Astoria LLC (175 MW)	Kern County	Under Environmental Review
Barren Ridge One by Recurrent Energy (74 MW)	Kern County	Approved
Beacon Solar Photovoltaic Project (250 MW)	Kern County	Approved
Cenergy Power (0.5 MW)	Kern County	Approved
Chevron Energy Solutions (2 MW)	Kern County	Approved
Clearwater and Yakima Solar (two separate 20 MW's)	Kern County	Under Environmental Review
Columbia I by Recurrent Energy (20 MW solar PV)	Kern County	Approved
Columbia II by Recurrent Energy (20 MW solar PV)	Kern County	Approved
Columbia III by Recurrent Energy (10 MW solar PV)	Kern County	Approved
Elk Hills Solar by enXco (7 MW)	Kern County	Approved
Fremont Valley Preservation Water Bank & Solar Project (1,008 MW)	Kern County	Under Environmental Review
FRV EAFB Solar Holdings LLC (Oro Verde Solar) (450 MW)	Kern County	Under Environmental Review
FRV Mojave Solar Project by FRV Mojave Solar, LP (20 MW)	Kern County	Under Environmental Review
FRV Valley Solar Project (2 sites: Regulus, Adobe) (95 MW)	Kern County	Approved
FS Weldon Solar – Foresight Solar (20 MW)	Kern County	Under Environmental Review
Goose Lake Solar by enXco (15 MW)	Kern County	Approved
Great Lakes II Solar by Recurrent Energy (5 MW solar PV)	Kern County	Approved
High Desert Solar (18 MW)	Kern County	Under Environmental Review
Kern County General Services Dept – Lerdo Detention Facility (2 MW)	Kern County	Approved
Kern Solar Ranch (1,000 MW)	Kern County	Under Environmental Review

TABLE 4.1-3 (Continued)
SOLAR ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Solar Projects – 86 Projects (14,723.05 MW) (cont.)		
Kingbird Solar Project (40 MW)	Kern County	Under Environmental Review
Lost Hills (32.5 solar PV)	Kern County	Approved
Maricopa Sun Solar Complex (700 MW Solar PV)	Kern County	Approved
Meadows Field Solar Project (0.75 MW)	Kern County	Approved
Monte Vista (126 MW Solar PV)	Kern County	Under Environmental Review
Old River I by Recurrent Energy (20 MW solar PV)	Kern County	Under Environmental Review
Old River II by Recurrent Energy (17 MW solar PV)	Kern County	Under Environmental Review
Orion Solar by Fotowatio Renewable Ventures (20 MW)	Kern County	Under Environmental Review
Pioneer Green Solar Project (125 MW)	Kern County	Approved
Regenesis Power for Kern County Airports Dept (0.9 MW PV)	Kern County	Complete
Ridge Rider Solar Park by Global Real Estate Investment Partners, LLC (38 MW solar PV)	Kern County	Under Environmental Review
Rosamond 1 by Recurrent Energy (20 MW solar PV)	Kern County	Complete
Rosamond 2 by Recurrent Energy (20 MW solar PV)	Kern County	Approved
Rosamond Solar Array by First Solar (155 MW)	Kern County	Complete
Rosamond Solar Project by SGS Antelope Valley, LLC (120 MW)	Kern County	Approved
SKIC Development Inc (33 MW)	Kern County	Approved
SLP Solar (Sunlight Partners, LLC) (12-12.5 MW)	Kern County	Application Deemed Complete 8/28/2012
Smyrna Solar by enXco (20 MW)	Kern County	Approved
Tehachapi Photovoltaic Project (20 MW solar PV)	Kern County	Under Environmental Review
Tehachapi Solar 2 by Recurrent Energy(20 MW)	Kern County	Approved
Tehachapi Solar by Recurrent Energy (20 MW)	Kern County	Approved
Vaquero Energy (1 MW)	Kern County	Approved
Wasco-Charca Solar by Solar Land Partners (8 MW)	Kern County	Under Environmental Review
Willow Springs Solar Array by First Solar (160 MW)	Kern County	Under Environmental Review
GE Energy LLC (40 MW)	Kern County (Chantico Rd)	Approved
LADWP (10 MW)	Kern County (Jawbone Canyon Rd)	Approved
Avenal Park (9 MW solar PV)	Kings County (Avenal	Approved
Corcoran I (20 MW solar PV)	Kings County (Avenal	Under Environmental Review
Corcoran II (20 MW solar PV)	Kings County (Avenal	Under Environmental Review
GWF (125 MW solar PV)	Kings County (Avenal	Under Environmental Review
Sand Drag (19 MW solar PV)	Kings County (Avenal	Approved
Sun City (20 MW solar PV)	Kings County (Avenal)	Approved

TABLE 4.1-3 (Continued)
SOLAR ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Solar Projects – 86 Projects (14,723.05 MW) (cont.)		
NRG Alpine Suntower (66 MW solar PV)	Los Angeles County	Under Construction
Palmdale Hybrid Power Project Unit 1 (50 MW solar thermal, part of a hybrid project)	Los Angeles County	Approved
AV Solar Ranch One (230 MW solar PV)	Los Angeles County (Antelope Valley)	Under Construction
Blythe Airport Solar 1 Project (100 MW solar PV)	Riverside County	Approved in 2009 Building. Permit applied for December 2010.
Blythe Solar Power (968 MW)	Riverside County	Under Construction
Desert Harvest Solar Farm (150 MW)	Riverside County	Approved
Desert Sunlight Solar Farm (550 MW)	Riverside County	Under Construction
First Solar's Blythe (21 MW solar PV)	Riverside County	Complete
Genesis Solar Energy (250 MW)	Riverside County	Under Construction
McCoy Solar Energy (750 MW)	Riverside County	Approved
Rice Solar Energy (150 MW)	Riverside County	Approved
Rio Mesa Solar (500 MW)	Riverside County	Under Environmental Review
Solargen Panoche Valley Solar Farm (420 MW Solar PV)	San Benito County	Approved
Calico Solar (663.5)	San Bernardino County	Approved
Ivanpah Solar Energy (250 MW)	San Bernardino County	Under Construction
K Road Calico Solar (664 MW)	San Bernardino County	Under Environmental Review
Kramer Junction Solar Energy Center by Boulevard Associates (20 MW solar PV)	San Bernardino County	Under Environmental Review
Lucerne Valley Solar (50 MW solar PV)	San Bernardino County	Under Environmental Review
Soda Mountain Solar (350 MW)	San Bernardino County	Under Environmental Review
Stateline Solar Farm (300 MW)	San Bernardino County	Under Environmental Review
Gray Butte Solar PV (139 MW Solar PV)	San Bernardino County (U.S. Highway 395 and Highway 58)	Approved, On Hold
Abengoa Mojave Solar Project (250 MW solar thermal)	San Bernardino County(Harper Lake)	Approved
California Valley Solar Ranch (SunPower) (250 MW solar PV)	San Luis Obispo County (Carrizo Valley)	Under Construction
Topaz Solar Farm (First Solar) (550 MW solar PV)	San Luis Obispo County (Carrizo Valley)	Complete
Stanislaus Solar Project II (10 MW PV)	Stanislaus County	Under Environmental Review

SOURCE: BLM Wind and Solar Applications, 2013; BLM Website, April 2013; California Energy Commission Generation Tracking Report, 2013; Kern County Planning and Community Development Website, 2013.

TABLE 4.1-4
WIND ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Wind Projects – 69 Projects (9,150.36 MW)		
Golden Hills (previously Altamont Repower II) (150 MW)	Alameda County	Under Environmental Review
Patterson Pass/Altamont Repowering Project (20 MW)	Alameda County	Under Environmental Review
Summit Winds (Repower) (89.5 MW)	Alameda County	Under Environmental Review
Tres Vaqueros Windfarm Repowering Project (41 MW repowering project)	Contra Costa County, Altamont Pass Wind Resource Area	Complete
Vasco Winds Repowering Project (80.5 MW repowering project)	Contra Costa County, Altamont Pass Wind Resource Area	Complete
Ocotillo Wind Energy Facility (315 MW)	Imperial County	Complete
Alta (50 MW)	Kern County	Complete
Alta Addendum I	Kern County	Complete
Alta East (formerly Oak Creek Sun Creek) (300 MW)	Kern County	Complete
Alta East Infill (132 MW)	Kern County	Complete
Alta East Wind (300 MW)	Kern County	Complete
Alta II by Terra-Gen (330 MW)	Kern County	Complete
Alta Infill II (530 MW)	Kern County	Complete
Alta X (138 MW)	Kern County	Complete
Alta XI (90 MW)	Kern County	Complete
Alta XIII (100 MW)	Kern County	Complete
Avalon (300 MW)	Kern County	Approved
Clear Vista Ranch Wind (9.9 MW)	Kern County	Under Environmental Review
Coram ZC 60 (6 MW)	Kern County	Under Environmental Review
Coram, Inc. (3 MW)	Kern County	Approved (2008)
Coram, Inc. (3 MW)	Kern County	Approved (2009)
Irell Foundation (3 MW)	Kern County	Under Environmental Review
Jawbone Wind Energy Project (39 MW)	Kern County	Approved
Manzana Wind Project (300 MW)	Kern County	Approved (2008)
Morgan Hills (230 MW)	Kern County	Under Environmental Review
North Peak Wind (126 MW)	Kern County	Development
North Sky River Project by Nextera (300 MW)	Kern County	Complete
Pacific Wind by enXco (151 MW)	Kern County	Approved
Pine Canyon Wind Project by LADWP (150 MW)	Kern County	Under Environmental Review
Pine Tree Wind Project by LADWP (120 MW)	Kern County	Complete
Ridgetop I (6 MW)	Kern County	Under Environmental Review
Ridgetop II (5 MW)	Kern County	Under Environmental Review
Rising Tree (234 MW)	Kern County	Under Environmental Review
Soledad Mountain Wind (250 MW)	Kern County	Under Environmental Review
Tylerhorse Wind (60 MW)	Kern County	Under Environmental Review
Windstar Addendum I (120 MW)	Kern County	Under Environmental Review

TABLE 4.1-4 (Continued)
WIND ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Wind Projects – 69 Projects (9,150.36 MW) (cont.)		
Windstar by Western Wind (65 MW)	Kern County	Approved (2009)
Windswept Energy by Western Wind (72 MW)	Kern County	Under Construction
Alta-Oak Creek Mojave Project (up to 800 MW)	Kern County, west of Mojave	Complete
Walker Ridge Wind Energy Generation (70 MW)	Lake and Colusa Counties	Under Environmental Review
Horse Lake (51 MW)	Lassen County	Development
Lompoc Wind Energy Project (97.5 MW)	Lompoc, Santa Barbara County	Approved
Pacific Wind (Iberdrola) Tule Wind (200 MW)	McCain Valley, San Diego County	Under Construction
King City Wind Project (5 MW)	Monterey County	Under Environmental Review
Panziera Winery (1 MW)	Monterey County	Under Environmental Review
Soledad Wastewater Treatment Plant (3 MW)	Monterey County	Under Environmental Review
Montezuma Hills (37 MW)	Montezuma Hills, Solano County	Complete
Montezuma Hills Wind II (60 MW)	Montezuma Hills, Solano County	Complete
Shiloh II (150 MW repower) by Shiloh Wind Partners LLC (enXco)	Montezuma Hills, Solano County	Completed (12/08)
Shiloh III (200 MW repower) by Shiloh Wind Partners LLC (enXco)	Montezuma Hills, Solano County	Complete
SMUD-Solano Phase 2B (63 MW)	Montezuma Hills, Solano County	Completed (12/07)
Solano Wind Project Phase 3 (up to 128 MW)	Montezuma Hills, Solano County	Complete
Mountain View Power Partners Novation/REC (66 MW)	Riverside County	Under Environmental Review
Wind Power Partners 1993 (California) (40.16 MW)	Riverside County	Under Environmental Review
AES Daggett Ridge (84 MW)	San Bernardino County	Complete
Cleghorn Ridge Wind (120 MW)	San Bernardino County	Under Environmental Review
Granite Mountain Wind Energy (81 MW)	San Bernardino County	Under Construction
Silurian Valley Wind (160 MW)	San Bernardino County	Development
Jewel Valley (158 MW)	San Diego County	Under Environmental Review
Jordan (92 MW)	San Diego County	Under Environmental Review
Manzanita Wind (58 MW)	San Diego County	Under Environmental Review
Shu'luuk Wind (Campo Wind) (160 MW)	San Diego County	Under Environmental Review
Tule Wind Energy Facility (186 MW)	San Diego County	Approved
Iberdrola Tule Wind (200 MW)	San Diego County, McCain Valley	Under Environmental Review
Lompoc Wind Energy (56 MW)	Santa Barbara County	Under Environmental Review
Hillcrest Wind Power Project 1 (175 MW)	Shasta County	Under Environmental Review
Hatchet Ridge Wind Project (100 MW)	Shasta County, Burney	Complete
Delta Wind (178 MW)	Solano County	Under Environmental Review
Ponderosa (151.8 MW)	Tehama County	Under Environmental Review

SOURCE: BLM Wind and Solar Applications, 2013; BLM Website, April 2013; California Energy Commission Generation Tracking Report, 2013; Kern County Planning and Community Development Website, 2013.

TABLE 4.1-5
GEOTHERMAL ENERGY PROJECTS ON STATE AND PRIVATE LANDS

Project Name	Location	Status
Geothermal Projects – 24 Projects (1,556.6 MW)		
Buckeye Development Project by Calpine (30 MW)	Geyserville, Sonoma	Under Environmental Review
Black Rock Geothermal 1 (53 MW)	Imperial County	Approved, On Hold
Black Rock Geothermal 2 (53 MW)	Imperial County	Approved, On Hold
Black Rock Geothermal 3 (53 MW)	Imperial County	Approved, On Hold
Black Rock Geothermal 5, 6(235 MW)	Imperial County	Under Environmental Review
Black Rock Geothermal 7, 8, 9(159 MW)	Imperial County	Under Environmental Review
California Ethanol and Power Imperial Valley 1, LLC	Imperial County	Approved
East Brawley (49 MW)	Imperial County	Under Environmental Review
Esmeralda 2 San Felipe (20 MW)	Imperial County	Under Environmental Review
Esmeralda Truckhaven (40 MW)	Imperial County	Under Environmental Review
Hudson Ranch 1 (49.9 MW)	Imperial County	Approved
Hudson Ranch 2 (49.9 MW)	Imperial County	Approved
Orita (50 MW)	Imperial County	Under Environmental Review
Orni 18, LLC Geothermal Power Plant (49.9 MW)	Imperial County	Approved
Orni 19, LLC Geothermal Power Plant (49.9 MW)	Imperial County	Approved
Orni 21 Wister (49 MW)	Imperial County	Under Environmental Review
Simbol Calipatria Plant I	Imperial County	Approved
Simbol Calipatria Plant II (SmCP2) (336 MW)	Imperial County	Under Environmental Review
South Brawley (49 MW)	Imperial County	Under Environmental Review
Truckhaven I (49 MW)	Imperial County	Approved
Casa Diablo #1-3 (37 MW)	Mono County	Completed
Casa Diablo #4 (30 MW)	Mono County	Under Environmental Review
The Geysers Field (22 power plants, 35 MW)	Sonoma County	Completed
Wildhorse North Geysers, Calpine (30 MW)	Sonoma County	Approved

SOURCE: BLM Wind and Solar Applications, 2013; BLM Website, April 2013; California Energy Commission Generation Tracking Report, 2013; Kern County Planning and Community Development Website, 2013.

Other BLM-Authorized Actions and Known Actions/Activities in the Cumulative Scenario

Other existing BLM authorized actions and other known actions/activities along the I-10 corridor in Eastern Riverside County are identified in Table 4.1-6.Other future foreseeable projects along the I-10 corridor in Eastern Riverside County are identified in Table 4.1-7. These projects are shown in figure 4.1-1.

TABLE 4.1-6
EXISTING PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	Interstate 10	Linear interstate highway running from Santa Monica to Blythe (in California)	Caltrans	Existing	N/A	Interstate 10 (I-10) is a major east-west route for trucks delivering goods to and from California. It is a four-lane divided highway in the project region.
2	Chuckwalla Valley State Prison	19025 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing. CVSP opened in December 1988.	1,080	State prison providing long-term housing and services for male felons classified as medium and low-medium custody inmates jointly located on 1,720 acres of state-owned property. APN 879040006, 008, 012, 027, 028, 029, 030
3	Ironwood State Prison	19005 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing. ISP was activated on February 1, 1994.	640	ISP jointly occupies with Chuckwalla Valley State Prison 1,720 acres of state-owned property, of which ISP encompasses 640 acres. The prison complex occupies approximately 350 acres with the remaining acreage used for erosion control, drainage ditches, and catch basins. APNs 879-040-001, 004, 009, 010, 011, 015, 016, 017, 018, 019, 020
4	Devers-Palo Verde 1 Transmission Line	From Palo Verde (Arizona) to Devers Substation	SCE	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from Arizona to the SCE Devers Substation, near Palm Springs. DPV1 will loop into the approved Midpoint Substation (now called Colorado River Substation), which will be located 10 miles southwest of Blythe. See D and E in Table 3.18-3.
5	Blythe Energy Project	City of Blythe, north of I-10, 7 miles west of the CA /AZ border	Blythe Energy, LLC	Existing	76	520 MW combined-cycle natural gas-fired electric-generating facility. Project is connected to the Buck Substation owned by WAPA.
6	(Intentionally Left Blank)					
7	Eagle Mountain Pumping Plant	Eagle Mountain Road, west of Desert Center	Metropolitan Water District of Southern California	Existing		144-foot pumping plant that is part of the Metropolitan Water District of Southern California's facilities. APNs 807-150-007, 807-150-009, 807-150-010
8	Recreational Opportunities	Eastern Riverside County	BLM	Existing	N/A	BLM has numerous recreational opportunities on lands in eastern Riverside County along the I-10 corridor including the Wiley's Well Campground, Coon Hollow Campground, and Midland Long-Term Visitor Area.

TABLE 4.1-6 (Continued)
EXISTING PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
9	Kaiser Mine	Eagle Mountain, north of Desert Center	Kaiser Ventures, Inc.	Existing		Kaiser Steel mined iron ore at Kaiser Mine in Eagle Mountain and provided much of the Pacific Coast steel in the 1950s. Mining project also included the Eagle Mountain Railroad, 51 miles long. Imported steel captured market share in the 1960s and 1970s and primary steelmaking closed in the 1980s. 701380031
10	Blythe Energy Project Transmission Line	From the Blythe Energy Project (Blythe, CA) to Julian Hinds Substation	Blythe Energy, LLC	Existing	N/A	Transmission line modifications including upgrades to Buck Substation, approximately 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds Substation, upgrades to the Julian Hinds Substation, installation of 6.7 miles of new 230 kV transmission line between Buck Substation and SCE's DPV 500 kV transmission line.
11	Blythe PV Project	Blythe	First Solar	CPUC approved project terms of a 20 year power purchase agreement for sale of 7.5 MW, Under construction in fourth quarter, 2009	200	7.5 MW solar photovoltaic project located on 200 acres. Project was constructed by First Solar and sold to NRG Energy.
12	Chuckwalla Valley Raceway	Former site of the Desert Center Airport	Developer Matt Johnson	Existing. Construction was completed in March 2010.	400	Existing 2.68 mile long, 40 foot wide Grand Prix style vehicle/motorcycle raceway located on 400 acres of private land formerly used as the Desert Center Airport. APNs 811-142-016, 811-142-006. Facilities include a member-only raceway, fueling facility, RV camping, classroom, vendor area, and event space.
13	Intake Blvd. Shell Station	Blythe, CA		Completed	N/A	Reconstruction of a Shell facility located at Intake & Hobson Way. Demolition occurred in 2008, reconstruction completed in 2012.

SOURCE: CEC RSA, 2010 Section B.3.4, Table 2; BLM Wind and Solar Applications, 2013; BLM Website, April 2013; California Energy Commission Generation Tracking Report, 2013; Kern County Planning and Community Development Website, 2013.

TABLE 4.1-7
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Three Commercial Projects	Blythe, CA	Various	Approved	N/A	Three commercial projects have been approved by the Blythe Planning Department including Agate Road & RV Storage, Riverway Ranch Specific Plan, and Agate Senior Housing Development.
B	This row intentionally left blank.					
C	Fifteen residential developments	Blythe, CA	Various	Approved or Under Construction	N/A	Twelve residential development projects have been approved by the Blythe Planning Department including: Vista Palo Verde (83 Single Family Residential [SFR]), Van Weelden (184 SFR), Sonora South (43 SFR), Ranchette Estates (20 SFR), Irvine Assets (107 SFR), Chanslor Village (79 SFR), St. Joseph's Investments (69 SFR), Edgewater Lane (SFR), The Chanslor Place Phase IV (57 SFR), Cottonwood Meadows (103 Attached SFR), Palo Verde Oasis Phase IV (29 SFR). Three residential development projects have been approved and are under construction including: The Chanslor Phase II & III (78 SFR), River Estate at Hidden Beaches, Mesa Bluffs Villas (26 Attached SFR).
D	Devers-Palo Verde 2 Transmission Line Project	From the Midpoint Substation to Devers Substation (CA-only portion)	SCE	CPUC Petition to Modify Request to construct CA-only portion was approved by CPUC November 2009. DPV2 to Arizona was originally approved by CPUC in June 2007but not pursued by SCE after 2009. BLM ROD approving the project issued July 2011. CA-only portion began construction December 2011.	N/A	New 500 kV transmission line parallel to the existing Devers-Palo Verde Transmission Line from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs. The ROW for the 500 kV transmission line would be adjacent to the existing DPV ROW and would require an additional 130 feet of ROW on federal and State land and at least 130 feet of ROW on private land and Indian Reservation land.
E	Colorado River Substation Expansion	10 miles southwest of Blythe	SCE	CPUC published the Final Supplemental EIR April 2011. Construction is expected to be completed in December 2013.	90	The substation was approved by the CPUC (as the "Midpoint Substation") but is proposed to be expanded as a 500/230 kV substation and would be constructed in an area approximately 1,000 feet by 1,900 feet, permanently disturbing approximately 90 acres. The 500 kV switching station would include circuit breakers, disconnect switches, and other equipment. The switchyard would be equipped with 108-foot-high dead-end structures. Outdoor night lighting would be designed to illuminate the switchrack when manually switched on.

TABLE 4.1-7 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
F	Desert Southwest Transmission Line	118 miles primarily parallel to DPV	Imperial Irrigation District	Final EIR/EIS prepared in 2005. Approved by the BLM in 2006.	N/A	New, approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.
G	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	License application filed with FERC in June 2009. EIR published in mid-2010; FERC Draft EIS published in December 2010.	1,524	1,300 MW pumped storage project designed to store off-peak energy to use during peak hours. The captured off-peak energy would be used to pump water to an upper reservoir. When the water is released to a lower reservoir through an underground electrical generating facility the stored energy would be added into the Southwestern grid during “high demand peak” times, primarily weekdays. Estimated water use is 8,100 AFY for the first four-year start-up period and replacement water is 1,763 AFY thereafter (Eagle Crest Energy Company, 2009).
H	enXco McCoy; CACA 049490	10 miles northwest of Blythe	enXco	Plan of Development submitted to BLM Palm Springs-South Coast Field Office	12,837	300 MW solar photovoltaic project on 12,837 acres. Project would require a 14-mile transmission line to proposed SCE Colorado River Substation south of 1-10. Would use 575-600 AFY of water.
I	Genesis Solar; CACA 48880	North of 1-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra (FPL)	Began construction in December 2010, expected to be in operation by July 2014.	4,640	250 MW solar trough project on 4,640 acres north of Ford Dry Lake. Project includes six-mile natural gas pipeline and a 5.5 gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then travel east on shared transmission poles to the Colorado River Substation (NextEra, 2011).
J	Chuckwalla Solar I; CACA 049490	1 mile north of Desert Center	Chuckwalla Solar I, LLC	Plan of Development submitted to the BLM Palm Springs-South Coast Field Office September 2006.	4,082	200 MW solar photovoltaic project on 4,082 acres. Project would be developed in several phases and would tap into an existing SCE 161-kV transmission line crossing the site.
K	Rice Solar Energy Project; CACA 48880	Rice Valley, Eastern Riverside County	Rice Solar Energy, LLC (Solar Reserve, LLC)	CEC license issued December 2010; project is in the compliance phase. Pre- Application Review with the Riverside County Planning Department in June 2011; Final EIS published in June 2011.	1,410	150 MW solar power tower project with liquid salt storage. Project is located on approximately 1,410 acres and includes a power tower approximately 650 feet tall and a 10-mile-long interconnection with the WAPA Parker-Blythe transmission line.
L	Blythe Airport Solar I Project	Blythe Airport	U.S. Solar	Riverside County approved Plot Plan No. 24616 for the project on December 14, 2010.	640	100 MW solar photovoltaic project located on 640 acres of Blythe airport land.

TABLE 4.1-7 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
M	Blythe Solar Power Project; CACA 48811	North of I-10, immediately north of the Blythe Airport	NextEra Blythe Solar Energy Center, LLC	Approved by CEC and BLM in 2010; Project activity temporarily suspended due to an ownership change from Solar Millennium LLC/Chevron Energy to NextEra, a solar technology change from trough to PV, and reductions in the output of the proposed project from 1,000 MW to 485 MW and in the size from 6,831 approved acres to 4,138 proposed acres. NextEra filed a Plan of Development Supplement with the BLM in March 2013, and Revised Petition to Amend with the CEC in April 2013 that describes the changes.	4,138	485 MW solar PV facility on approximately 4,138 acres.
N	Desert Quartzite; CACA 049397	South of I-10, 8 miles southwest of Blythe	First Solar (previously OptiSolar)	Plan of Development submitted to the BLM Palm Springs-South Coast Field Office	7,245	600 MW solar photovoltaic project located on 7,245 acres. Adjacent to DPV transmission line and SCE Colorado River Substation. Approximately 27 AF of water would be used during construction and 3.8 AFY during operation.
O	Desert Sunlight; CACA 48649	North of Desert Center	Desert Sunlight Holdings, LLC	Began construction in September 2011, expected to be in operation by 2015 (First Solar, Inc., 2013).	4,144	250 MW solar photovoltaic project located on 4,144 acres. Project would tie into the SCE Red Bluff Substation. Approximately 27 AF would be used during construction and 3.8 AFY during operation (First Solar, Inc., 2011b).
P	Red Bluff Substation; CPUC 10-11-012	Adjacent to the south side on I-10, east of Aztec Road, and west of Corn Springs Road, in unincorporated Riverside County	SCE	Began construction in September 2011, expected to be operational by December 2013	75	220/500 kV Substation. Planned to interconnect renewable projects near Desert Center with a DPV transmission line.
Q	Desert Harvest Project; CACA 049491	6 miles north of Desert Center	enXco	ROD published March 2013.	1,208	150 MW photovoltaic plant on 1,208 acres of BLM land. Would require a 5- to 8-mile transmission line to planned SCE Red Bluff Substation.

TABLE 4.1-7 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
R	Eagle Mountain Landfill Project; CACA-30070 CACA-25594 CACA-31926	Eagle Mountain, North of Desert Center	Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc.	U.S. Court of Appeals for the Ninth Circuit issued its opinion regarding the EIS for the project in November 2009 and ruled that the land exchange for the project was not properly approved by the administrative agency. Kaiser's Mine and Reclamation is considering all available options.	3,500	The project is proposed to be developed on a portion of the Kaiser Eagle Mountain Mine in Riverside County, California. The proposed project comprises a Class III nonhazardous municipal solid waste landfill and the renovation and repopulation of Eagle Mountain Townsite. The proposal by the proponent includes a land exchange and application for rights-of-way with the Bureau of Land Management and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. The Eagle Mountain landfill project proposes to accept up to 20,000 tons of non-hazardous solid waste per day for 50 years.
S	RCL00161R1	N of I-10 and NW of US Highway 95	N/A	Reclamation Plan applied for September 2009	N/A	Proposes to expand the existing operation from approximately 14.3 acres to approximately 29.4 acres with an expiration date of December 2050 with Reclamation activities ending in 2051.
T	BGR100258	Ehlers Blvd and W Chanslor Way	N/A	Grading Permit applied for November, 2010	N/A	Grading permit for 9000 square foot church.
U	BNR100126	8 miles south of the intersection of HWY 177 and HWY 10	U.S. Solar	Building Permit applied for December, 2010	400	49.5 MW solar PV plant (PP24754)
V	CUP03602	South of Nicholls Warm Springs, approximately 8 miles west of Blythe	N/A	Conditional Use Permit approved April, 2009	200	21 MW photovoltaic facility on 200 acres (Riverside County ALUC, 2008)
W	Palo Verde Mesa Solar Project; CUP03684; PUP00916	East of Blythe Solar project, South of Gypsum Solar project	Renewable Resources Group, Inc.	Conditional Use Permit applied for September, 2011; Public Use Permit applied for July 2012.	3,250	Up to 486 MW solar PV generating facility. The project would include a solar panel array, two on-site electrical substations, a maintenance building, and ancillary facilities. A 14.7-mile 230 kV transmission line would cross lands under County, City of Blythe, and BLM jurisdiction to connect to the Colorado River Substation (Riverside County Planning Department, 2012).
X	Gypsum Solar; CACA 051950	Approximately 7 miles north of Blythe	Ridgeline Energy LLC	BLM application pending. Application date March, 2010.	3,000	50 to100 MW solar PV or concentrated PV energy facility. The project would include a solar panel array, a maintenance building, an administration building, a raw water storage tank, a demineralized water tank, a potable water tank, and a 230 kV or lower transmission line and substation.

TABLE 4.1-7 (Continued)
FUTURE FORESEEABLE PROJECTS ALONG THE I-10 CORRIDOR (Eastern Riverside County)

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
Y	This row intentionally left blank.					
Z	Eagle Mountain; CACA 51664	Eagle Mountain, north of Desert Center	L.H. Renewables	BLM application pending. Application date December 2009.	2,690	Wind energy testing facility consisting of two meteorological towers. Each tower would be 197 feet high and would passively collect and record data year round. Total disturbance would be 1.13 acres for both towers (BLM, 2011h).
AA	Desert Center II; CACA 052344	Four miles north east of Desert Center	Ridgeline Energy, LLC	BLM application pending. Application date September 2010.	260	20 MW solar PV project occupying 130 acres of a 260 acre ROW area. The facility would utilize a single-axis tracking system. Transmission infrastructure would be built over a 350 foot span to connect with the existing SCE 161 kV Blythe-Eagle Mountain transmission line (Ridgeline Energy, LLC, 2010b).
AB	This row intentionally left blank.					
AC	McCoy Solar Energy Project; CACA-048728	Approximately 13 miles west of Blythe, Ca. South of I-10	McCoy Solar, LLC (NextEra)	Approved by BLM in 2013; Riverside County Draft EIR in preparation.	4,496	Up to 750 MW solar PV project on 4,019 acres of public land and 477 acres of private land.
AD	Blythe Mesa Solar Energy Project; CUP 3670, PUP 913	Approximately 5 miles west of Central Blythe and 40 miles east of Desert Center	Renewable Resources Group, Inc.	RRG submitted applications to Riverside County for a CUP and PUP; an NOP was issued in November 2011.	3,660	485 MW PV solar project to be constructed on 3,660 acres. Project components would include a solar array, three substations, two operation and maintenance buildings, a new 8.4 mile long 230 kV double circuit gen-tie line and other related infrastructure. The project would interconnect with the CRS. (Riverside County Planning Department, 2011).

SOURCE: Riverside County 2013a, b; Riverside County Planning Department, 2011; Riverside County Planning Department, 2005; City of Blythe 2013; CEC 2010; BLM 2011a, b, 2013a, b, c, d, e, f, g, h, i; DOE and BLM, 2011; BrightSource Energy, Inc, 2013.

4.1.4 Mitigation Measures Included in the Analysis

For impacts identified in the following resource sections, mitigation measures have been developed that would be implemented during all appropriate phases of the project from initial ground breaking to operations, and through closure and decommissioning. The mitigation measures include a combination of the following:

1. Regulatory requirements of other Federal, State, and local agencies;
2. USFWS terms and conditions identified in the Biological Opinion;
3. Terms and conditions identified in the Programmatic Agreement reached pursuant to National Historic Preservation Act Section 106; and
4. Additional BLM-proposed mitigation measures, standard right-of-way (ROW) grant terms and conditions, and best management practices.

These requirements generically are referred to as “Mitigation Measures” throughout this Draft SEIS. Because these Mitigation Measures are derived from a variety of sources, they also may be required, and their implementation regulated, by other agencies. The Applicant would be required by the ROD and the ROW grant to comply with the applicable requirements of other agencies; for example, see 43 CFR §2805.12(a) (Federal and state laws and regulations) and (i)(6) (more stringent state standards for public health and safety, environmental protection and siting, constructing, operating, and maintaining any facilities and improvements on the ROW). Any non-compliance with implementation of these other federal or state requirements could affect the approval status of the ROD and ROW grant.

The Applicant voluntarily has committed to implementing nearly all of the mitigation measures that are identified in the PSPP PA/FEIS as APMs for the PSEGS. A comprehensive listing of the APMs is provided in Appendix C.

4.1.5 Terms and Conditions found in FLPMA and BLM ROW Regulations

Title V of FLPMA addresses the issuance of ROW authorizations on public land. The BLM has identified all the lands that would be occupied by facilities associated with the PSEGS that are needed for its construction, operation, and maintenance. The general terms and conditions for all public land ROWs are described in FLPMA Section 505, and include measures to minimize damage and otherwise protect the environment, require compliance with air and water quality standards, and compliance with more stringent state standards for public health and safety, environmental protection, siting, construction, operation, and maintenance of ROWs. The Secretary may prescribe additional terms and conditions as he deems necessary to protect Federal property, provide for efficient management, and among other things, generally protect the public interest. For this project, terms and conditions would be incorporated into the ROW grant as necessary to protect public safety. The environmental consequences analysis in Chapter 4 of this Draft SEIS identifies impacts and mitigation measures to reduce or eliminate impacts.

Finally, all BLM ROW grants are approved subject to the regulations set forth in 43 CFR Part 2800, which specify that the BLM may, at any time, change the terms and conditions of a ROW grant "as a result of changes in legislation, regulations, or as otherwise necessary to protect public health or safety or the environment" (43 CFR §2805.15(e)). The BLM will monitor conditions and review any ROW grant issued for the PSEGS to evaluate if future changes to the grant terms and conditions are necessary or justified under this provision of the regulations to further minimize or reduce impacts resulting from the project.

If approved, the solar energy ROW authorization would include diligent development terms and conditions, consistent with the requirements of 43 CFR §2805.12(i)(5). Failure of the holder to comply with the diligent development terms and conditions would provide the BLM authorized officer the authority to suspend or terminate the authorization (43 CFR §2807.17).

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

4.1.6 Irreversible and Irretrievable Commitment of Resources

As discussed in the PSPP PA/FEIS, NEPA requires an analysis of the significant irreversible effects of a proposed action. The PSEGS would irretrievably commit resources over the 30-50 year life of the project. After 30-50 years, the PSEGS would be decommissioned and the land returned to its pre-project state. This would indicate that potentially some of the resources on site could be retrieved. However, 30-50 years is a long time and many variables could affect the affected area over that period. In addition, it is debatable how well the site can recover to its pre-project state. Open desert lands and sensitive desert habitats can take a long time to recover from disturbances such as development. This and other irreversible and irretrievable commitments of resources that would be required if the PSEGS or another action alternative were approved are described and analyzed throughout this Chapter 4.

4.1.7 Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The short-term uses of the environment as a result of the implementation of any of the action alternatives include those typically found with solar energy development. Short-term impacts associated with construction activities are described on a resource-by-resource basis in this Chapter 4, and include effects to the natural environment, cultural resources, and recreation resources. These can be compared to the long-term benefits of the action alternatives, which would provide for the production of clean, renewable energy consistent with federal and state goals to increase production of renewable energy to help reduce dependence on fossil fuels.

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4.2 Impacts on Air Resources

4.2.1 Impact Assessment Methodology

The air resources impact assessment methodology described in PSPP PA/FEIS Section 4.2.1 (p. 4.2-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 and No Action Alternative A can be found in PSPP PA/FEIS Section 4.2.2 (pp. 4.2-11 through 4.2-14). The discussion of cumulative impacts for these alternatives has been revised, as necessary, in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.2.3, below).

Mass Emissions Estimates

This section analyzes the potential for construction-, operation-, maintenance-, and decommissioning-related activities to emit air pollutants and, thereby, contribute to adverse air quality conditions. Project mass emission estimates were provided by the Applicant (Galati, 2013; Palen Solar Holdings, LLC, 2013) and peer reviewed by BLM's environmental consultant, Environmental Science Associates. The PSEGS-related construction emissions are summarized in Tables 4.2-2 and 4.2-3, and emissions associated with operation and maintenance are summarized in Tables 4.2-6 and 4.2-7.

Dispersion Modeling Assessment

An analysis has been conducted that draws upon AERMOD modeling data, as well as the latest versions of the AERMOD preprocessors, to determine surface characteristics (AERSURFACE version13016), process meteorological data (AERMET version12345), and determine receptor elevations and hill slope factors (AERMAP version11103). This air dispersion modeling analysis was provided by the Applicant (Galati, 2013; Palen Solar Holdings, LLC, 2013) and peer reviewed by BLM's environmental consultant, Environmental Science Associates. The analysis provides a means of predicting the location and ground-level pollutant concentrations related to the PSEGS emissions sources. The AERMOD model is used a vehicle to estimate offsite pollutant concentrations over short-term (e.g., 1-hour, 3-hour, 8-hour, and 24-hour) and annual periods. Model results are described in terms of maximum concentrations, with units of mass per volume of air (i.e., micrograms per cubic meter ($\mu g/m^3$)).

The inputs for the air dispersion model include: the mass emissions estimates for the on-site facility sources, including start-up and nighttime preservation boilers, the emergency generators, fire pumps, and wet-surface air condensers; specific engine and vehicle emissions data; and meteorological data, such as wind speed, mixing height, and site elevation. Modeled impacts were added to background concentrations and then compared with the ambient air quality standards for each respective air contaminant to determine whether the PSEGS's emission impacts would cause a new exceedance of an ambient air quality standard or would contribute to an existing exceedance. The background concentrations used in this analysis (see Table 4.2-1) have been updated since the PSPP PA/FEIS and are based on the representative ambient

TABLE 4.2-1
BACKGROUND CONCENTRATIONS (μg/m^3)

Pollutant	Averaging Time	Background
NO_2	1 hour	124.1
	Annual	22.6
CO	8 hour	1,980.9
PM10	24 hour	144.8
	Annual	35.9
PM2.5	24 hour[b]	35.4
	Annual	7.6
SO_2	24 hour	13.1

concentrations for the Project area contained in Table 3.2-2, *Criteria Pollutant Maximum Ambient Concentrations*.

Construction Modeling Analysis

The construction modeling methodology used for the PSEGS is similar to that used for the PSPP PA/FEIS; however, several parameters were changed for this Draft SEIS. Construction of the PSEGS would last approximate 33 months compared to the 39 month construction period of the PSPP and the construction disturbance area has been reduced under the PSEGS from approximately 5,200 acres to 3,794 acres total. Similar to the PSPP, construction elements of the PSEGS would include the two solar power plants (each with its own power block and solar array, as well as other ancillary facilities such as the administration buildings, warehouse, and parking lot), a 230-kV transmission line to connect the project to Red Bluff Substation located to the west, access roads, and perimeter fencing, among other features. However, under the PSEGS, the 230-kV gen-tie line would include a slight reroute, a redundant telecommunications line would be installed beneath the gen-tie line maintenance road, a natural gas pipeline would be required to connect the PSEGS to the SoCal Gas natural gas main pipeline south of I-10, and a secondary access road would be provided within the a natural gas pipeline ROW. The construction emissions concentrations for the PSEGS are summarized in Table 4.2-4.

Operation Modeling Analysis

Similar to emissions associated with construction, operation-related emissions concentrations of the PSEGS were estimated using the AERMOD model. AERMOD was used to determine the magnitude and location of the maximum impacts for each pollutant and averaging period. The maximum short-term impacts were used for comparison to NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ standards. NO_2 impacts were calculated from modeled NO_x impacts using the Ambient Ratio Method (ARM) and USEPA default ratios; namely, multiplying 1-hour NO_x impacts by 80 percent and annual NO_x impacts by 75 percent. The operation and maintenance emissions concentrations for the PSEGS are summarized in Table 4.2-7.

4.2.2 Direct and Indirect Impacts of the PSEGS

Construction

Exhaust emissions would be generated during construction activities from off-road construction equipment and on-road vehicles, and fugitive dust would occur primarily related to ground disturbance activities. Exhaust emissions from off-road equipment would result from diesel construction equipment (e.g., dozers, graders, cranes) used to prepare the site and install structures, water trucks used to control dust emissions, dump trucks used to haul soil spoils and other debris, diesel-powered welding machines, generators, and air compressors. On-road vehicle exhaust emissions would result from construction vehicles, including heavy-duty diesel trucks used to deliver materials and equipment, medium-duty diesel trucks used for various tasks during construction, and automobile and pickup trucks used to transport workers to and from and around the construction site. Fugitive dust emissions would result from dust entrained by ground disturbance related to site preparation and grading/excavation activities, as well as from travel on paved and unpaved surfaces on-site and off-site. Dust would also be entrained during aggregate and spoil loading and unloading operations, production of concrete at the on-site batch plant, and by wind erosion of areas disturbed during construction activities.

PM_{10} and $PM_{2.5}$ mass emissions estimates provided by the Applicant (Palen Solar Holdings, LLC, 2013) for fugitive dust that would be generated during construction of the PSEGS are presented in Table 4.2-2. The peer review conducted by BLM's environmental consultant, Environmental Science Associates, revealed that the estimates provided by the Applicant may under estimate the Project-related construction fugitive dust emissions due to the use of a mass-related emission factor for cut/fill activities and due to the use of an elevated dust control efficiency factor that is unsubstantiated.

The Applicant's fugitive dust emissions estimates are based in part on an area-based uncontrolled emission factor (0.011 ton PM_{10} per acre-month) associated with Midwest Research Institute's Level 2 Analysis Procedure (Midwest Research Institute, 1996). The recommended procedure indicates that application of the area-based emission factor should be used with a volume-based cut/fill emission factor of 0.059 ton PM_{10} per 1,000 cubic yards of cut/fill handled. However, the Applicant's fugitive dust analysis includes a mass-based emission factor for soil handling (i.e., 0.0006 pounds PM_{10} per ton cut/fill), which results in substantially less dust emissions compared to the Midwest Research Institute recommended volume-based factor.

In addition, the Applicant's fugitive dust emissions estimates assume a dust control efficiency rate of 80 percent based on a watering schedule of 3 to 4 watering cycles per day and limiting vehicle speeds to 15 mph. The SCAQMD has published dust control efficiency ratings that are unique for various types of construction activities. For example, applying water to disturbed areas would result in a control efficiency of approximately 61 percent related to general soil disturbance activities, limiting on-site vehicle speeds to 15 mph on unpaved roads would result in a control efficiency of 57 percent related to vehicle travel on unpaved roads, and covering trucks with loose loads and maintaining at least 12 inches of freeboard would result in a control efficiency of 91 percent associated with loose material hauling. Given that the fugitive dust emission estimates

TABLE 4.2-2
PSEGS CONSTRUCTION FUGITIVE DUST MASS EMISSIONS

	Applicant Estimates		BLM Adjustments	
Fugitive Dust Source	**PM_{10} pounds/day**	**$PM_{2.5}$ pounds/day**	**PM_{10} pounds/day**	**$PM_{2.5}$ pounds/day**
Onsite Grading/Earthwork/Cut & Fill	9.52	2.0	40.92	8.59
Onsite Erection Phase	11.39	2.39	18.22	3.83
Onsite Gas Line	0.11	0.02	1.43	0.30
Onsite T-Line	0.16	0.03	8.91	1.87
Onsite Paved Roads	1.04	0.2	1.04	0.22
Onsite Soil Storage Piles	0.52	0.21	0.83	0.17
Onsite Unpaved Roads	6.95	0.69	11.12	2.34
Onsite Concrete Batch Plant	2.09	0.21	2.09	0.21
Offsite Access Road Construction	*0.27*	*0.06*	0.43	0.09
Offsite Paved Roads	*7.40*	*1.25*	7.40	1.25
Offsite Track-out	*0.29*	*0.05*	*0.46*	*0.10*
Fugitive Dust Source	**Total Tons**	**Total Tons**	**Total Tons**	**Total Tons**
Onsite Grading/Earthwork/Cut & Fill	1.51	0.32	6.39	1.34
Onsite Erection Phase	3.39	0.71	5.42	1.14
Onsite Gas Line	0.01	0.002	0.25	0.05
Fugitive Dust Source	**PM_{10} Total Tons**	**$PM_{2.5}$ Total Tons**	**PM_{10} Total Tons**	**$PM_{2.5}$ Total Tons**
Onsite T-Line	0.02	0.004	1.09	0.23
Onsite Paved Roads	0.34	0.06	0.34	0.06
Onsite Soil Storage Piles	0.09	0.04	0.14	0.03
Onsite Unpaved Roads	2.07	0.21	3.31	0.70
Onsite Concrete Batch Plant	0.31	0.03	0.31	0.07
Offsite Access Road Construction	*0.02*	*0.0034*	0.03	0.01
Offsite Paved Roads	*2.42*	*0.41*	2.42	0.41
Offsite Track-out	*0.10*	*0.02*	0.16	0.03
Fugitive Dust Source	**Normalized Tons/Year**	**Normalized Tons/Year**	**Normalized Tons/Year**	**Normalized Tons/Year**
Max Total Onsite Fugitive Dust Emissions	*2.81*	*0.50*	*6.27*	*1.31*
Max Total Offsite Fugitive Dust Emissions	*0.92*	*0.16*	*0.95*	*0.16*

SOURCE: Palen Solar Holdings, LLC, 2013 with adjustments by ESA.

for the PSEGS are estimated using emission factors that account for all on-site activities (as opposed to specific on-site emissions sources), it is not possible to estimate the exact combined control efficiency rating that would be associated with the fugitive dust APMs identified in Appendix C. However, considering the SCAQMD control efficiency rates identified above, it is reasonable to assume that the combined control efficiency of the dust control APMs identified in Appendix C would achieve a total control efficiency rating of 68 percent.

Table 4.2-2 presents the PM_{10} and $PM_{2.5}$ mass emissions estimates provided by the Applicant and with adjustments made by the BLM consultant based on the more conservative Midwest Research Institute emission factor for cut/fill activities and the associated reduction of the overall dust control efficiency rate to 68 percent as discussed above.

Construction-related exhaust mass emissions estimates are presented in Table 4.2-3. Tables 4.2-2 and 4.2-3 include the Applicant's emissions estimates that were used as input for the AERMOD model in terms of maximum pounds per day, total tons for the whole construction period, and normalized tons per year assuming a 33-month construction period.

TABLE 4.2-3
PSEGS CONSTRUCTION EXHAUST MASS EMISSIONS

Exhaust Sources, lbs/day	**NO_x**	**CO**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Onsite Power Block/Solar Fields and Linear Facilities	760.8	396	97.1	1.00	37.7	37.7
Onsite Support Vehicles	0.17	1.63	0.14	0.0025	0.026	0.026
Offsite Delivery/Hauling	*19.9*	*7.62*	*1.55*	*0.04*	*0.93*	*0.93*
Offsite Worker Travel	*36.68*	*410.18*	*35.18*	*0.075*	*6.74*	*6.72*
Exhaust Sources, Total Tons	**NO_x**	**CO**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Onsite Power Block/Solar Fields and Linear Facilities	263.62	137.2	33.64	0.36	13.07	13.07
Onsite Support Vehicles	0.057	0.563	0.047	0.001	0.009	0.009
Offsite Delivery/Hauling	*6.9*	*2.64*	*0.54*	*0.013*	*0.323*	*0.323*
Offsite Worker Travel	*12.71*	*142.13*	*12.19*	*0.26*	*2.22*	*2.33*
Exhaust Sources, Normalized Tons/Yr	**NO_x**	**CO**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Max Total Onsite Exhaust Emissions	*95.88*	*50.1*	*12.25*	*0.131*	*4.76*	*4.76*
Max Total Offsite Exhaust Emissions	*7.13*	*52.64*	*4.63*	*0.099*	*0.965*	*0.965*

SOURCE: Galati, 2013; Palen Solar Holdings, LLC, 2013

The annual emissions are based on the average equipment mix and use rates during the construction period. Daily emissions are derived from the annual values using the estimated construction time-frame (33 months). Table 4.2-4 summarizes the Applicant's air quality emissions concentrations estimates that would result from construction of the PSEGS. Table 4.2-5 summarizes the fugitive dust-related emissions concentrations adjusted with the more conservative assumptions described above for the mass emissions estimates presented in Table 4.2-2. The emission estimates indicate that construction could contribute to exceedances of the PM_{10} standards (24-hour and annual) and could cause exceedances of the 1-hour and 24-hour NAAQSs for NO_2 and $PM_{2.5}$, respectively. Adverse effects related to the creation of ozone resulting from construction of the PSEGS would be similar as those described in the PSPP PA/FEIS. As the MDAB is nonattainment of the AAQS for ozone, emissions of NO_x (including NO_2) and VOC from construction of the PSEGS have the potential to contribute to higher ozone levels in the region.

TABLE 4.2-4
MAXIMUM PSEGS CONSTRUCTION EMISSIONS CONCENTRATIONS

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 hour- CAAQS	200.6	124.1	324.9	339	96%
	1 hour NAAQS	200.6	124.1	324.9	188	**173%**
	Annual	0.7	22.6	23.3	57	41%
CO	1 hour	131	3,543	3,674	23,000	16%
	8 hour	52	1,981	2,033	10,000	20%
PM10	24 hour	15.3	144.8	160.1	50	**320%**
	Annual	0.10	35.9	36.0	20	**180%**
PM2.5	24 hour	3.4	35.4	38.8	35	**111%**
	Annual	0.05	7.6	7.7	12	64%
SO_2	1 hour	0.33	28.6	28.9	665	4%
	3 hour	0.21	28.6	28.8	1,300	2%
	24 hour	0.07	13.1	13.2	105	13%

SOURCE: Palen Solar Holdings, LLC, 2013

TABLE 4.2-5
MAXIMUM PSEGS CONSTRUCTION EMISSIONS CONCENTRATIONS
WITH BLM FUGITIVE DUST ADJUSTMENTS

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
PM10	24 hour	40.7	144.8	185.5	50	**371%**
	Annual	0.2	35.9	36.1	20	**180%**
PM2.5	24 hour	10.4	35.4	45.8	35	**131%**
	Annual	0.05	7.6	7.7	12	64%

SOURCE: Palen Solar Holdings, LLC, 2013 with adjustments by ESA associated with onsite fugitive dust emissions (see Table 4.2-2).

Operation

Emission estimates indicate that operation of the PSEGS would contribute to existing exceedances of the PM_{10} standards (24 hour and annual) and the $PM_{2.5}$ (24-hour) standard, which would represent an adverse effect on local and regional air quality. Emissions of other criteria pollutants would not adversely affect local or regional air quality. Adverse effects from ozone emissions resulting from operation of the PSEGS would be similar as described in the PSPP PA/FEIS. As the MDAB is nonattainment status under CAAQS for ozone, emissions of NO_x (including NO_2) and VOC from operation of the PSEGS do have the potential to contribute to higher ozone levels in the region. Tables 4.2-6 and 4.2-7 summarize estimated maximum daily mass emissions and maximum annual mass emissions resulting from operation of the PSEGS. The PSEGS would not trigger the Prevention of Significant Deterioration (PSD) program

TABLE 4.2-6
PSEGS OPERATIONS – MAXIMUM DAILY MASS EMISSIONS (lbs/day)

Source	NO_x	VOC	CO	PM_{10}	$PM_{2.5}$	SO_x
Onsite Operation Emissions						
Auxiliary Boilers*	65.3	24.16	161.6	30.48	30.48	12.26
NTP Boilers	2.64	1.18	5.3	3.82	3.82	0.62
Emergency Fire Pump Engines	10.59	0.42	2.04	0.36	0.36	0.021
Emergency Generators	75.58	3.93	41.93	2.47	2.47	0.084
Wet Surface Air-cooled Condensers	---	---	---	0.36	0.36	---
Onsite Maintenance Vehicles**	8.83	2.58	5.92	0.37	0.37	1.86
Fugitive Dust	---	---	---	118.32	18.72	---
Fuel Depot	---	0.0557	---	---	---	---
Subtotal of Onsite Emissions	***162.94***	***32.32***	***216.8***	***156.18***	***56.58***	***14.84***
Offsite Emissions						
Delivery Vehicles	1.74	0.18	1.17	0.085	0.085	0.004
Employee Vehicles	3.68	3.53	41.10	0.68	0.68	0.08
Subtotal of Offsite Emissions	***5.42***	***3.71***	***42.27***	***0.77***	***0.77***	***0.08***
Total Maximum Daily Emissions	**168.4**	**36.0**	**259.1**	**156.9**	**57.3**	**14.9**

NOTES:
* Both Aux boilers in "very cold start day" mode.
** Onsite staff support vehicles, mirror washing vehicles, and water truck use

SOURCE: Galati, 2013

TABLE 4.2-7
PSEGS OPERATIONS – MAXIMUM ANNUAL MASS EMISSIONS (tons/yr)

Source	NO_x	VOC	CO	PM_{10}	$PM_{2.5}$	SO_x
Onsite Operation Emissions						
Auxiliary Boilers	6.93	1.6	15.22	2.03	2.03	0.8
NTP Boilers	0.46	0.20	0.91	0.66	0.66	0.11
Emergency Fire Pump Engines	0.264	0.009	0.051	0.009	0.009	0.0006
Emergency Generators	1.885	0.098	1.05	0.062	0.062	0.0021
Wet Surface Air-cooled Condensers	---	---	---	0.06	0.06	---
Onsite Maintenance Vehicles	1.61	0.471	1.08	0.067	0.067	0.339
Fuel Depot	---	0.01	---	---	---	---
Fugitive Dust	---	---	---	21.6	3.42	---
Subtotal of Onsite Emissions	***11.2***	***2.39***	***18.33***	***24.49***	***6.31***	***1.25***
Offsite Emissions						
Delivery Vehicles	0.226	0.023	0.152	0.011	0.011	0.0006
Employee Vehicles	0.67	0.64	7.50	0.12	0.12	0.01
Subtotal of Offsite Emissions	***0.9***	***0.66***	***7.65***	***0.131***	***0.131***	***0.011***
Total Maximum Annual Emissions	**12.1**	**3.05**	**26**	**25.1**	**6.44**	**1.26**

SOURCE: Galati, 2013.

requirements; therefore, a PSD increment and impact analysis protocol is not required. These estimates were used as inputs to AERMOD to estimate PSEGS-related emissions concentrations. Table 4.2-8 summarizes the air pollutant emissions concentrations estimated to result from operation of the PSEGS.

TABLE 4.2-8
PSEGS OPERATION EMISSION IMPACTS

Pollutant	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	177.4	124.1	301.7	339	89%
	1-hr NAAQS	5.1	124.1	129.2	188	69%
	Annual	0.20	22.6	22.8	57	40%
CO	1-hr	253.0	3,543	3,796	23,000	17%
	8-hr	12.6	1,981	1,994	10,000	20%
PM_{10}	24	3.30	144.8	148.1	50	**296%**
	Annual	0.58	35.9	36.5	20	**183%**
$PM_{2.5}$	24	0.67	35.4	36.1	35	**103**%
	Annual	0.11	7.6	7.7	12	64%
SO_2	1-hr	1.39	28.6	30.0	665	5%
	3-hr	0.69	28.6	29.3	1,300	2%
	24-hr	0.15	13.1	13.3	105	13%

SOURCE: Palen Solar Holdings, LLC, 2013; Galati, 2013.

Closure and Decommissioning

The anticipated lifespan of the PSEGS is estimated to be 30 to 50 years. Emissions associated with the closure and decommissioning of the PSEGS would be the same as those described in the PSPP PA/FEIS.

4.2.3 Cumulative Impacts

PSEGS

The geographic scope considered for potential cumulative impacts to regional air quality is the MDAB. PSEGS-related construction activities, as described in Section 4.2.2, *Direct and Indirect Impacts*, would result in short or long term emissions of PM_{10} or NOx and VOC would contribute to existing exceedances of the state ozone and/or PM_{10} AAQSs. Therefore, any cumulative project that would occur at the same time as construction or operation of the PSEGS that emits PM_{10} or NO_x and VOC could contribute to a cumulative air impact. See Table 4.1-1, *Cumulative Scenario*, for a summary of all cumulative projects.

Reconfigured Alternative 2

Cumulative impacts for Reconfigured Alternative 2 (Options 1 and 2) would be the same as those described for the PSEGS.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no cumulative air quality impacts would occur. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative air quality impacts similar to those of the PSEGS.

4.2.4 Summary of Mitigation Measures

The Applicant has committed to the relevant mitigation measures that were identified in PSPP PA/FEIS Section 4.2.4 (p. 4.2-17). These APMs would help to avoid and minimize direct and indirect impacts to air resources (See Appendix C). No mitigation measures are recommended.

4.2.5 Residual Impacts after Mitigation Measures were Implemented

Residual impacts on air resources would exist even with implementation of APMs SC-1 through 11. Construction and operation of the PSEGS would result in emissions of PM_{10} and NO_x and VOC that would contribute to existing exceedances of the state ozone and/or PM_{10} AAQSs.

4.2.6 Unavoidable Adverse Impacts

Construction and operation of the PSEGS would result in unavoidable adverse impacts on air resources through emissions of PM_{10} and NOx and VOC that would contribute to existing exceedances of the state ozone and/or PM_{10} AAQSs.

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4.3 Impacts on Global Climate Change

4.3.1 Impact Assessment Methodology

The methodology to assess impacts related to GHG emissions and climate change under NEPA is continuing to evolve as consensus forms as to how best evaluate such effects at both proposed action-specific and cumulative levels. The CEQ published draft guidance on February 18, 2010, for federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for federal actions under NEPA. For example, the CEQ recommends that agencies consider the direct and indirect GHG emissions from a proposed action and its alternatives and quantify and disclose those emissions in the environmental document (40 CFR §1508.25). The CEQ further recommends that agencies evaluate the relationship of climate change effects to a proposed action or alternatives, including the relationship to project design, environmental impacts, mitigation, and adaptation measures. Agencies also should consider mitigation measures to reduce proposed action-related GHG emissions from all phases and elements of the proposed action and alternatives over their expected life, subject to reasonable limits based on feasibility and practicality (CEQ, 2010).

GHG Emissions

For the PSEGS, this section analyzes the potential for construction-, operation-, maintenance- and decommissioning-related activities to emit GHGs and, thereby, contribute meaningfully to global warming in light of the combined emissions of other broad-scale causes of climate change. PSEGS emission estimates were prepared for the Applicant by Palen Solar Holdings (2013) and peer reviewed by BLM's environmental consultant, Environmental Science Associates. PSEGS-related construction and operation emissions are summarized in Tables 4.3-1 and 4.3-2, respectively. Although it is doubtful that this individual project, standing alone, could result in adverse climate change effects, this analysis considers the "incremental impact" of project emissions as a possible contributor, together with the incremental impacts of other past, present, and reasonably foreseeable actions, to cause global climate change. Mitigation measures are considered.

Independent of NEPA, but pursuant to 40 CFR Part 98, *Mandatory Reporting of Greenhouse Gases Rule*, USEPA requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year (USEPA, 2011a). In addition, pursuant to 40 CFR Part 52, *Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule*, the USEPA mandated to apply PSD and Title V requirements to facilities whose stationary source CO_2e emissions exceed 100,000 tons per year (USEPA, 2011b). For the purposes of this Draft SEIS, estimated net GHG emissions for the PSEGS are compared to the federal GHG mandatory emissions reporting threshold of 25,000 metric tons per year to determine whether the GHG emissions would contribute substantially to global climate change.

Climate Change

Agencies under the Department of Interior (DOI), including the BLM, are required by Secretarial Order No. 3289 (September 14, 2009) to consider potential impacts associated with climate change, including potential changes in flood risk, water supply, sea level rise, wildlife habitat and migratory patterns, invasion of exotic species, and potential increases in wildfires. In addition, climate change is expected to result in a suite of additional potential changes that could affect the natural environment, in a manner that is relevant to the PSEGS. The issues associated with the potential for climate change to affect the PGEGS Project are the same as those that are discussed qualitatively in PSPP PA/FEIS Section, 4.3.3, *Cumulative Impacts of the Proposed Action on Climate Change*.

Cumulative Impacts

Impacts resulting from construction, operation, maintenance, and decommissioning of the PSEGS and other action alternatives would result in emissions of GHGs that, together with past, present, and reasonably foreseeable future actions, could contribute to climate change. Project-specific GHG emissions are considered in the context of this cumulative impacts analysis. Although the cumulative scenario described in Section 4.1.3, *Cumulative Scenario Approach*, generally includes activities in the California desert and highlights projects along the I-10 corridor, the geographic scope of the cumulative effects analysis for climate change is much broader: it is both regional and global. Potential cumulative effects, whether adverse or beneficial, on climate change could be short-term (i.e., limited to the PSEGS proposed construction period) or long-term (i.e., occur during its projected 30-40 year lifespan).

4.3.2 Direct and Indirect Impacts of the PSEGS

Construction

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. Development of the PSEGS would require on-site and off-site construction activities that would result in short-term, unavoidable increases in equipment and vehicle GHG exhaust emissions. Construction of the PSEGS would require 16-hour workdays, 5 days a week, 21 days per month, for a period of approximately 34 months (starting in fourth quarter of 2013).

For the purposes of the GHG emissions analysis, construction equipment emissions estimates are based on several activity sources, including solar field assembly and installation, site road work, operations of the concrete batch plant, tower and boiler erection, power block erection, development of the common area switchyard, and other miscellaneous activities. The combustion of diesel fuel to provide power for the operation of various equipment and vehicles results in the generation of GHG emissions. GHG exhaust emissions associated with construction equipment (e.g., cranes, forklift, scrapers, graders, loaders, tractors) were estimated by multiplying CO_2 and CH_4 SCAQMD calendar year 2013 off-road emissions factors for the specific equipment types and horsepower ratings, by the equipment inventory amounts and usage rates provided by the Applicant for each of the activity sources described above. GHG construction emissions associated with vehicle use (e.g., light duty trucks, heavy and medium duty diesel trucks) were estimated by multiplying CO_2 emission factors from CARB's EMFAC 2007 model by the total vehicle miles travelled for each vehicle type, under the assumption that there would be an average of 596 daily construction worker roundtrips and 15 daily delivery-related roundtrips, and that roundtrips would average 75 miles per trip.

Where Off-road and EMFAC 2007 emission factors for N_2O and CH_4 were unavailable, N_2O and CH_4 construction emissions were estimated using N_2O and CH_4 fractions of CO_2 for diesel and/or gasoline combustion from data obtained from the California Climate Action Registry (CCAR) General Protocol. CO_2e emissions were then estimated using International Panel on Climate Change global warming potential factors for CH_4 and N_2O, and combining the adjusted CH_4 and N_2O emissions with the CO_2 emissions. As shown in Table 4.3-1, the PSEGS would generate a total of approximately 61,120 tons (55,447 metric tons) CO_2e during the 33-month construction period.

TABLE 4.3-1
PROJECT CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS

Construction Emissions	CO_2e tons	CO_2e metric tons
Total for the 33-month Construction Period	61,120	55,447
Total normalized for a One-year Period	22,226	20,163

NOTES: Emissions in the table do not include indirect emission estimates that would be associated with electricity or water use. It is estimated that these emission sources would increase the emission estimates provided in the table by up to 10 percent.

SOURCE: Palen Solar Holdings, LLC, 2013; Galati, 2013.

Operation and Maintenance of the PSEGS

Electricity generation GHG emissions generally are dominated by CO_2 emissions from carbon-based fuels; other sources of GHG emissions are typically small. For the PSEGS, the primary fuel (solar energy) is GHG-free; however, natural gas would be fired in the four auxiliary boilers to assist with daily start-up of the power generation equipment and to preserve energy in the steam cycle overnight. GHG emissions from these auxiliary natural gas-fired boilers were estimated based on the expected fuel use (in terms of MMBtu) using natural gas emissions factors obtained from the CCAR General Protocol. In addition, gasoline and diesel fuel would be used in the maintenance vehicles, offsite delivery vehicles, staff and employee vehicles, and the three diesel emergency generators and three fire water pump engines. Gasoline and diesel vehicle emissions were estimated using EMFAC 2007 emission factors for Riverside County and anticipated miles travelled data, and emissions related to diesel emergency generators and fire pumps were estimated based on average USEPA and SCAQMD values for fuel consumption per horsepower-hour and CCAR General Protocol emission factors for diesel fuel. Sulfur hexafluoride (SF_6) emissions also could result from electrical equipment leakage from the six 230-kV circuit breakers at the switchyard. It is assumed that SF_6 would leak from the circuit breakers at a combined rate of 1 pound per year. The anticipated annual operations-related GHG emissions for the PSEGS are shown in Table 4.3-2. All emissions are converted to CO_2e and totaled.

TABLE 4.3-2
PSEGS OPERATIONAL GREENHOUSE GAS EMISSIONS

Emission Sources	CO_2e	
	tons	**metric tons**
Start-Up Boilers	63,487	57,594
Nighttime Preservation Boilers	5,950	5,398
Emergency Generators	208	189
Fire Pumps	57	52
Maintenance Vehicles	36,377	33,001
Delivery Vehicles	58	53
Employee Vehicles	1,314	1,192
Equipment Leakage (SF_6)	13	12
Total Project GHG Emissions	**107,464**	**97,490**

SOURCE: Palen Solar Holdings, LLC, 2013; Galati, 2013

The PSEGS is estimated to emit, directly from primary and secondary emission sources, approximately 107,464 tons (97,490 metric tons) CO_2e GHG emissions per year, which is approximately five times the amount estimated to emit for the PSPP. The project, 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]).

Carbon Sequestration

In addition to direct emission of GHGs, operations of the PSEGS also would cause the clearing of land and complete removal of vegetation over most of the project site. This would reduce the ongoing natural carbon uptake by vegetation and soil. As discussed in the PSPP PA/FEIS Section 3.3.7 (p. 3.3-9), a study of the Mojave Desert indicated that the desert may uptake carbon in amounts as high as 100 grams per square meter per year. This would equate to a maximum reduction in carbon uptake, calculated as 1.48 metric tons of CO_2 per acre per year for areas with complete vegetation removal and soil disturbance. The maximum equivalent loss in carbon uptake for the PSEGS would be about 6,356 tons (5,766 metric tons) of CO_2 per year.

Displacement of Fossil Fuel-Based Energy

The PSEGS would generate renewable energy and displace energy generated from conventional sources that emit more GHGs per unit of energy generated. The PSEGS's GHG emissions reduction potential from energy displacement would be substantial. Assuming the PSEGS would displace approximately 4,000 hours per year of operation of a typical 500 MW combined-cycle gas turbine-based power plant, it would also displace approximately 1,071,000 tons of CO_2e (Palen Solar Holdings, 2012).

Closure and Decommissioning of the Project

PSEGS-specific contributions to global climate change during the closure and decommissioning phase are anticipated to be comparable in type and magnitude to, but likely to be lower than, the construction emissions for the PSEGS, as discussed above.

Impact Summary

This analysis compares total net operation-related PSEGS GHG emissions to the USEPA's GHG mandatory emissions reporting threshold of 25,000 metric tons per year. As shown in Tables 4.3-2 and 4.3-3, the annual direct and indirect GHG emissions for operations would be up to 107,464 tons (97,490 metric tons) CO_2e per year. This is above the USEPA's GHG mandatory emissions reporting threshold. However, when accounting for the loss of carbon sequestration and the displacement of fossil fuel-based energy, the PSEGS would result in an overall net reduction of GHG emissions of approximately 957,180 tons (868,349 metric tons) of CO_2e per year (see Table 4.3-3). Therefore, implementation of the PSEGS would provide an environmental benefit to counter the potential effects of climate change.

TABLE 4.3-3
TOTAL NET OPERATIONAL GREENHOUSE GAS EMISSIONS

	CO_2e	
Emission Sources	**tons**	**metric tons**
Direct and Indirect Emissions	107,464	97,490
Loss of Carbon Sequestration	6,356	5,766
Displacement of Fossil Fuel-Based Energy	-1,071,000	-971,605
Total Net Project GHG Emissions	**-957,180**	**-868,349**

Mitigation Potential of the PSEGS on Climate Change

Mitigation potential of the PSEGS on climate change would be the same as for the PSPP as described in the PSPP PA/FEIS. As discussed previously, power produced by the PSEGS would offset power production by fossil-based power plants. Therefore, the PSEGS would provide a direct benefit related to climate change. Implementation of the PSEGS would provide direct and indirect benefits that counter the potential effects of climate change, as described in the PSPP PA/FEIS.

4.3.3 Cumulative Impacts

PSEGS

GHG Emissions

GHG emissions are inherently a cumulative concern because it is the accumulation of global GHG emissions in the atmosphere that results in global climate change; therefore, the geographic scope of cumulative impacts related to GHG emissions and climate change is global. The PSEGS would result in short-term GHG emissions during construction and decommissioning, limited long-term GHG emissions during operations and maintenance, and would result in a long-term reduction of carbon sequestration at the site. However, the PSEGS would result in a long-term net reduction GHG by displacing electricity from fossil fuel-fired power plants. Virtually all of the cumulative projects described in Section 4.1.3, *Cumulative Scenario Approach*, could contribute to global warming due to the generation of short-term and/or long-term GHG emissions. However, similar to the PSEGS, the renewable energy cumulative projects could result in long-term decreases in GHG emissions by displacing electricity from fossil fuel-fired power plants.

Climate Change Impact on the Project

Climate change, which itself is a cumulative impact associated with the global increase of GHG emissions and other factors, is expected to result in a suite of potential changes that could affect the natural environment in a manner that is relevant to the PSEGS. The climate change impacts on the PSEGS would be the same as those described in PSPP PA/FEIS Section 4.3.4 (p. 4.3-13 et seq.), *GHG Emissions Associated with Past, Present, and Reasonably Foreseeable Future Actions.*

Reconfigured Alternative 2

Option 1

Based on the updated cumulative scenario, the cumulative impacts for Reconfigured Alternative 2 Option 1 would be the same as those for the PSEGS.

Option 2

Based on the updated cumulative scenario, the cumulative impacts for Reconfigured Alternative 2 Option 2 would be the same as those for the PSEGS.

No Action Alternative A

There would be no cumulative air quality impacts under No Action Alternative A. See PSPP PA/FEIS Section 4.3.3 (p. 4.3-12). However, since the ROW application area is located within the Riverside East Solar Energy Zone, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts similar to those of the PSEGS or PSPP.

GHG Emissions from Past, Present, and Reasonably Foreseeable Future Actions

The emission of GHGs from other projects in the cumulative scenario is described and analyzed in Section 4.3.4 of the PSPP PA/FEIS (4.3-13). This discussion is valid and has not been supplemented.

Environmental Consequences of Climate Change

No sufficient data or scientific method currently is available to precisely evaluate how the emissions from an individual project, such as the PSEGS, would contribute to global climate change. Therefore, based on available regional and global information, the overall cumulative environmental consequences of climate change, as relevant to the PSEGS, are the same as those discussed in PSPP PA/FEIS Section 4.3.4 (pp. 4.3-13, 4.3-14).

4.3.4 Summary of the Project-Specific Mitigation Measures

None recommended.

4.3.5 Residual Impacts after Mitigation Measures Were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.3.6 Unavoidable Adverse Impacts

There would be no unavoidable adverse climate change or GHG-related impacts associated with the PSEGS.

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4.4 Impacts on Cultural Resources

4.4.1 Impact Assessment Methodology

The cultural resources impact assessment methodology used in Chapter 4.4 of the PSPP PA/FEIS, along with the updated cultural resources studies conducted in 2013 (The BLM is awaiting cultural resource studies to identify resources that could be affected by the PSEGS but were not previously analyzed in the PSPP PA/FEIS. Upon completion of those studies, their findings will be incorporated into the impact analysis contained within this section and integrated into the Final SEIS), was used to analyze the impacts of the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Chapter 4.4. The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.4.3 below).

Area of Potential Effects

The Area of Potential Effects (APE) for the PSEGS is as follows:

1. For direct effects, the APE is defined as the area included within the PSEGS ROW grant. This includes areas that were not included in the PSPP APE, such as the gen-tie line reroute and natural gas line addition.
2. For indirect effects, the APE is the PSEGS ROW grant plus a 15-mile buffer, to take into account potential indirect (i.e. visual or auditory) effects to historic properties, including ethnographic or tribal resources.

Cultural Resources Inventory

The BLM is awaiting cultural resource studies to identify resources that could be affected by the PSEGS that were not analyzed in the PSPP PA/FEIS. These studies will include an inventory of cultural resources contained within the APE. The potential effects of the PSEGS will be described in the context of the APE. The analysis and impact conclusions will be presented in this chapter and integrated into the Final EIS. Results of the cultural records search and inventory work performed for the PSPP are provided in Section 3.4 of the PSPP PA/FEIS.

4.4.2 Direct and Indirect Impacts of the PSEGS

As described in PSPP PA/FEIS Section 4.4, ground-disturbing construction activities associated with the development of a solar project on the proposed site could have a direct impact on cultural resources and historic properties by damaging and displacing artifacts, diminishing site integrity and altering the characteristics that make the resources significant. In addition, in the case of historic architectural resources and places of traditional cultural importance, impacts can occur to the setting of a resource even if the resource is not physically damaged.

In general, impacts to archaeological resources for the PSEGS would be similar to those described in the PSPP PA/FEIS. However, based on graphical representations showing the anticipated disturbance below ground and the anticipated above-ground intrusion into the flat landscape, impacts associated with the PSEGS that are different from those evaluated in the PSPP PA/FEIS include:

1. Minimal grading is anticipated within the solar field, except as needed to construct roads. An internal roadways system would be constructed within the solar array fields, which is anticipated to disturb approximately 36 acres. Depth of soil disturbance associated with grubbing and blading would be typically 6- 12 inches with a maximum of approximately 3 feet below ground surface (bgs) in areas where necessary to maintain grade.

2. In the solar array fields, trenches would be excavated for the installation of underground systems, including electrical transmission systems and natural gas system. These trenches could be excavated to a depth of up to 12 feet.

3. Auguring for the heliostat support pylons could extend to a maximum depth of 12 feet. The heliostats would intrude into the flat landscape to a height of 12 feet.

4. Excavation and grading would be performed within each solar plant's power tower and power block areas, for the switchyard, within the administration complex area, and for the heliostat assembly buildings, which would cause ground disturbance down to a maximum depth of 8.5 feet.

5. The power towers would intrude onto the flat landscape to a maximum height of 750 feet; FAA-required lighting and lightning rods would extend an additional 10 feet.

6. The re-routing of the gen-tie line would affect approximately 18.9 acres, gen-tie line impacts to which were evaluated in the April 2011 Desert Sunlight Solar Farm California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement (BLM, 2011a) and related Record of Decision (BLM, 2011b).

7. A redundant telecommunications line would be installed underground within the gen-tie line ROW, which would require trenches excavated to a maximum depth of 12 feet.

8. The natural gas line would disturb an additional 2.7 acres within BLM lands and 0.6 acres within CalTrans right-of-way. The excavation would typically extend to a depth of 5 feet with an anticipated maximum depth of 12 feet to accommodate the crossing of I-10 by means of a jack and bore or directional drilling operation to minimize disturbance.

The area disturbed for construction and operation of the PSEGS would be approximately 3,896 acres. The BLM is awaiting cultural resource studies for areas that could be affected by the PSEGS that were not analyzed in the PSPP PA/FEIS. Upon completion of those studies, a discussion of the types and numbers of cultural resources that could potentially be affected by the full PSEGS would be included here, as would a discussion of the significant historic properties that could be affected by the PSEGS. This analysis, along with any mitigation measures that would reduce the significance of these impacts, will be presented in this chapter and incorporated into the Final EIS.

4.4.3 Cumulative Impacts

PSEGS

The BLM is awaiting cultural resource studies for areas that could be affected by the PSEGS that were not analyzed in the PSPP PA/FEIS. Upon completion of those studies, their findings will be incorporated into the cumulative impacts analysis contained within this section and integrated into the Final SEIS. The cumulative impacts analysis will describe the contribution of the PSEGS to the potential cumulative impacts on archeological resources and cultural landscapes from past, present, and reasonably foreseeable future actions (see Table 4.4-1 in this Draft SEIS).

Reconfigured Alternative 2

Options 1 & 2

In general, cumulative impacts to cultural resources would vary by alternative only to the degree to which direct and indirect impacts would vary by alternative. As neither Reconfigured Alternative 2 nor the conditions of the site on which it would occur has changed substantially from that described in the PSPP PA/FEIS, analysis of the cumulative impacts to cultural resources from this alternative does not require supplement. See PSPP PA/FEIS Section 4.4 for additional discussion.

No Action Alternative A

Under No Action Alternative A, the BLM would not approve the PSEGS. As a result, no solar energy project would be constructed on the site at this time, and BLM would continue to manage the site in a manner consistent with the existing land use designation in the CDCA Plan. Because the Solar PEIS ROD amended the CDCA Plan to identify the PSEGS site as within the East Riverside Solar Energy Zone, it is anticipated that future solar use of the site would be encouraged. Insufficient information is available at this time to allow for a meaningful analysis in this Draft SEIS of any future proposal on this site; available information is too speculative or conjectural.

4.4.4 Summary of Mitigation Measures

The BLM is awaiting cultural resource studies for areas that could be affected by the PSEGS that were not analyzed in the PSPP PA/FEIS. Upon completion of those studies, a discussion of the types and numbers of cultural resources that could be affected by the PSEGS would be included in this section, along with any mitigation measures that would reduce the significance of these impacts.

Any adverse effects that the PSEGS could have on cultural resources would be resolved through compliance with the terms and conditions of the existing Programmatic Agreement (PA) prepared and entered into consistent with NHPA Section 106 as that PA may be amended from time to time. In accordance with 36 CFR Section 800.14(b), PAs are used for the resolution of adverse effects for complex project situations and when effects on historic properties, resources eligible for or listed in the NRHP, cannot be fully determined prior to approval of an undertaking. The BLM prepared a PA for the PSPP in consultation with the State Historic Preservation Officer, Indian tribes, and other interested parties. The PA for the PSPP was signed and executed on October 7, 2010, and is now applicable to the PSEGS. The PA would be included as an appendix to the Final EIS.

Analysis of impacts in this document and implementation of the PA would demonstrate BLM's compliance with NHPA Section 106 and NEPA. As necessary, based upon the degree of impact, treatment plans containing measures to mitigate impacts on historic properties that cannot be avoided by project construction would be developed in consultation with stakeholders as stipulated in the PA.

4.4.5 Residual Impacts after Mitigation Measures were Implemented

The BLM is awaiting cultural resource studies to identify resources that could be affected by the PSEGS that were not analyzed in the PSPP PA/FEIS. Until those studies are completed, full consideration of potential impacts and necessary mitigation is not possible, nor is a determination of residual impacts after mitigation measures are implemented. As discussed in the PSPP PA/FEIS, any cultural resources damaged or destroyed by project construction, even if subjected to mitigation measures, would be permanently lost from the archaeological record. This would make the cultural resources unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available.

4.4.6 Unavoidable Adverse Impacts

Ground disturbance caused by the PSEGS would result in unavoidable adverse impacts on cultural resources through damage, displacement and destruction of sites, features, and artifacts, loss of integrity of cultural resources, and changes in the settings of cultural resources inconsistent with their historic or traditional cultural values.

4.5 Impacts on Environmental Justice

4.5.1 Impact Assessment Methodology

The environmental justice impact assessment methodology used in PSPP PA/FEIS Section 4.5 was used to analyze impacts of the PSEGS in this Draft SEIS, except in regard to the populations used to analyze the PSEGS's potential impacts. This analysis uses a demographic screening evaluation to determine whether a minority and/or low-income population exists within two potentially affected study areas. The primary study area consists of the one community that is partially contained within a 6-mile radius beyond the project footprint, the community of Desert Center. This radius is consistent with modeling of the range of the project's air quality impacts, and is also an appropriate study area for potential hazards and other physical environmental impacts, which are likely to be highly localized and could be felt disproportionately by one community when compared to another.

A secondary study area is used to examine the potential effects of the PSEGS on the largest city or community within the vicinity (i.e., the City of Blythe), which may experience effects related to traffic, socioeconomics, or other human environment impacts disproportionately compared to the greater community (in this case, Riverside County). The City of Blythe provides an appropriate level of demographic detail for effects within the secondary study area because such effects are more likely to be spread throughout the study area rather than felt within specific local neighborhoods or communities. Such effects are also not likely to occur in communities near the Colorado River that are further from I-10 because these communities would not likely provide housing for large numbers of project workers, nor do they provide roads or other amenities that are likely to be used by project workers or delivery vehicles.

The analysis of direct and indirect impacts of Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.5.2. The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.5.3, below).

4.5.2 Direct and Indirect Impacts of the PSEGS

Similar to the PSPP, applicable resource sections of this Draft SEIS were reviewed to determine whether any adverse impacts would occur to the minority communities of concern in Desert Center or Blythe. As described in Section 4.2, Impacts on Air Quality, construction and operation of the PSEGS could contribute to exceedances of the PM_{10} standards (24-hour and annual), and could contribute to higher ozone levels in the region. Additionally, construction could cause exceedances of the 1-hour and 24-hour NAAQSs for NO_2 and $PM_{2.5}$, respectively. Although these exceedances and increases in ozone levels would represent adverse regional impacts, the distance between the source of emissions (the project site) and the residents of Desert Center would be such that emissions would disperse before traveling that distance and would not occur there in concentrations that would result in adverse localized effects.

As described in Section 4.9, Impacts on Noise, no adverse noise or vibration impacts from the project are expected as a result of the project design, mitigation measures, and distance from sensitive receptors. Similarly, as described in Section 4.19, Impacts on Water Resources, the PSEGS would not result in wastewater discharges that could affect drinking water supplies or other water bodies, nor would it adversely affect local groundwater wells after APMs are implemented. Therefore, no disproportionately adverse air quality, noise, or water impacts would result for minority residents of the primary study area.

As described in Section 4.13, Social and Economic Impacts, and Section 4.16, Impacts on Transportation, similar to the PSPP, the PSEGS would not displace any homes or businesses, nor would any significant adverse traffic impacts result during project construction or operation. Additionally as described in Section 4.11, Impacts on Public Health and Safety, no significant and adverse public health and safety impacts are anticipated associated with the PSEGS. Therefore, no disproportionately adverse socioeconomic, traffic, or health and safety impacts would result for minority residents of the secondary study area.

4.5.3 Cumulative Impacts

PSEGS

No direct or indirect environmental justice impacts would result from the PSEGS. Therefore, no cumulative environmental justice impacts would result.

Reconfigured Alternative 2

Option 1

The contribution of Option 1 to cumulative impacts on environmental justice would be the same as that of the PSEGS.

Option 2

The contribution of Option 2 to cumulative impacts on environmental justice would be the same as that of the PSEGS.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site at this time, no contribution to a cumulative impact on environmental justice would occur. However, since the ROW application area is located within the Riverside East Solar Energy Zone, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future. If another project were to result in impacts on the environment or on human health and safety that would be experienced disproportionately by minority or low-income populations, it could result in a contribution to a cumulative impact on environmental justice.

4.5.4 Summary of Mitigation Measures

No environmental justice mitigation measures are proposed.

4.5.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.5.6 Unavoidable Adverse Impacts

No unavoidable adverse environmental justice impacts would occur.

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4.6 Impacts on Lands and Realty

4.6.1 Impact Assessment Methodology

The lands and realty impact assessment methodology used in Section 4.6.1 of the PSPP PA/FEIS was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in Section 4.6.2 of the PSPP PA/FEIS. The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS (see Section 4.6.3, below) to reflect the updated cumulative scenario.

4.6.2 Direct and Indirect Impacts of the PSEGS

The main components of the PSEGS are two proposed solar fields. Each solar field would contain heliostats that would surround the power block and power tower. The total acreage for the solar field for Unit 1 would be approximately 1,643 acres and for Unit 2 would be approximately 1,883 acres. Preliminary plans for the PSEGS solar fields are shown in Figure 2-3. A 230 kV gen-tie line and telecommunications cable would interconnect with the power grid at SCE's proposed Red Bluff Substation. The PSEGS also has proposed locating a redundant telecommunications cable underground entirely in the same ROW as the gen-tie line. The natural gas supply for the PSEGS would be provided by SoCal Gas. Related improvements are described in Section 2.1.4 of this Draft SEIS and the proposed route is shown in Figure 2-3. Also as described in Section 2.1.4, main site access would be provided through a new, 1,350-foot long, 24-foot wide, paved road. The access road would be constructed from a point just north of the I-10/Corn Springs Road entrance/exit ramps east to the project site entrance.

Although there are numerous existing ROWs of record within and adjacent to designated Corridors K and 30-52, only a few would be directly affected by the PSEGS. Any existing authorized use that would be affected by the PSEGS has "priority rights" in the sense that any new authorization(s) would be issued "subject to" the previously existing ROWs or other uses. Therefore, the Applicant would be required to mitigate any potential impacts to the existing authorized users at the Applicant's expense. This would mean bearing all costs for relocating or modifying any facilities such as power poles or conductor that might be necessary to accommodate the new use.

Impacts to Designated Corridors

Potential impacts to the designated corridors could occur as a result of the overhead gen-tie line, underground redundant telecommunications cable, and natural gas line that would cross portions of the corridors. However, with current technology, the potential impacts would be expected to be minimal, easily mitigated, and would not preclude continued and future use of either designated corridor. The existing corridor is approximately 2 miles wide. The PSEGS is expected to take up approximately 1 mile of the corridor. There are two existing transmission lines in the corridor: the Blythe Energy Project transmission line and the Devers-Palo Verde No. 1 transmission line.

These existing transmission lines take up approximately 100 feet of the 1 mile corridor width that would not be impacted by the PSEGS. Based on the cumulative scenario, it is foreseeable that two additional transmission lines would be constructed in the corridor: the Desert Southwest transmission line and Devers-Palo Verde No. 2 transmission line. It is expected that future use of the corridors would be slightly constrained by placement of additional linear facilities within, and following along the path of, the corridors. However, even with the PSEGS and existing and planned transmission lines, a conservative estimate would leave more than 0.75 mile of the corridor unconstrained.

Impacts from the access road exiting the frontage road and heading east to the project site and the emergency access road exiting the southern boundary of the site would be minimal because future transmission lines, both gas and electric, could easily bore under or span across the roads, respectively. Future use of the corridors would be slightly constrained by placement of additional linear facilities within the corridors.

The largest impact to the designated corridors would come from the proposed solar generating facility. Once constructed, the land encompassed by the PSEGS would not be available for placement of future site or linear facilities. Any future use would have to be constructed around the outermost perimeter of the PSEGS rather than spanning across or boring under the site. Given that both corridors are 2 miles wide, with I-10 being the approximate center line of both, virtually all of the north halves of both corridors would be rendered unusable for future site and linear projects at the PSEGS site. However, the land south of the site and south of both corridors is vacant desert land and could be available for expanding the width of the corridors to the south along this segment.

Impacts to Interstate 10

Potential impacts to I-10 from the overhead gen-tie line and telecommunications cable, buried redundant telecommunications cable, and buried natural gas line would be mitigated by following requirements of the Federal Highway Administration (FHWA) and/or Caltrans, and industry standards (SOPs) and best management practices (BMPs) for aerial and buried crossings of federal highways.

Potential impacts from the new access road that would exit Corn Springs Road and head east to PSEGS boundary and the emergency access road abutting the northern edge of the I-10 ROW boundary and extending into the project site would be mitigated by following requirements of the FHWA, Caltrans, and industry SOPs and BMPs for encroachment of federal/state highways.

Impacts to Other Authorized Uses

As proposed, potential impacts could occur from the overhead gen-tie line and telecommunications cable, buried redundant telecommunications cable, and buried natural gas line to authorized uses both north and south of I-10. However, construction and operation of these new linear facilities using industry SOPs and BMPs for crossing over or boring under existing authorized uses would effectively mitigate potential negative impacts to existing authorized users. Coordination with other agencies regarding their projects (such as with FERC regarding the Eagle Mountain Pumped Storage Hydroelectric Project) would further reduce the likelihood of potential negative impacts to existing authorized users.

As stated previously, existing authorized uses potentially affected by the PSEGS has “priority rights” and new authorization(s) would be issued “subject to” the previously existing ROWs or other uses. Therefore, the Applicant would be required to mitigate potential impacts at its own expense, such as bearing all costs for relocating or modifying facilities such as power poles or conductor that might be necessary to accommodate the new use.

The PSEGS proposes to leave in place SCE’s existing Eagle Mountain-Blythe 161-kV transmission line and therefore no impacts to this authorized use are anticipated as long as unrestricted access is provided to SCE for continued operation and maintenance of this powerline.

4.6.3 Cumulative Impacts

PSEGS

Impacts resulting from construction, operation, maintenance, and decommissioning of the PSEGS, when combined with those of past, present, or reasonably foreseeable future actions could result in a cumulative effect on lands and realty resources. The geographic scope of the cumulative effects analysis for Lands and Realty consists of eastern Riverside County, based on the jurisdictional boundaries within which the impacts of land use decisions could combine. Potential cumulative effects on Lands and Realty could occur during the PSEGS’s proposed 34-month construction period if, for example, it would be necessary to relocate or modify existing facilities within a, existing ROW or if future projects were constrained by the placement of PSEGS-related facilities located within designated corridors; or pursuant to closure and decommissioning activities.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in Chapter 3 of this Draft SEIS. Direct and indirect effects of the construction, operation and maintenance, and closure and decommissioning of the PSEGS on Lands and Realty are analyzed above (and in PSPP PA/FEIS Section 4.6.2 for alternatives). Updated past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1 of this document. Among them, other ROW applications for linear and non-linear projects that could be developed in eastern Riverside County include other utility-scale solar projects and the proposed Eagle Mountain Pump Storage project, associated gen-tie lines, other related ancillary facilities, three commercial projects, and 15 residential developments.

Additional actions that could have cumulative impacts include, among others, ROW grants for other renewable energy projects, substation projects, and other linear facilities such as fiber optics, gas or electric transmission lines. ROW grants and other land use decisions associated with these actions and projects would affect the nature, type, and intensity of uses authorized on the lands potentially affected by the project and its ancillary facilities. Permitting the PSEGS and other projects within the cumulative impact area could affect the amount of land that would be available for permitting by the BLM for other uses consistent with the CDCA Plan. Permitting the PSEGS and other projects for the single use proposed (e.g., solar energy development, pump storage, etc.) would restrict the use of the lands during the life of those projects reducing the number of acres of lands available to be administered by the BLM for other uses. Upon decommissioning of the PSEGS and other single use projects, affected acreage would become available for multiple use management by the BLM.

In addition to the PSEGS, other proposed solar generation projects are located in eastern Riverside County and have been approved by the BLM or are currently under construction. Such projects include McCoy Solar Energy Project, Genesis, Chuckwalla Solar I, Rice Solar Energy Project, Blythe Airport Solar I Project, Blythe Solar Power Project, Desert Quartzite Project, Desert Sunlight Project, and the Desert Harvest Project.

Figure 4.1-1 identifies the following projects by letter, as follows: McCoy Solar Energy Project (Letter H), Genesis Solar(Letter I), Chuckwalla Solar I (Letter J), Rice Solar Energy Project (Letter K), Blythe Airport Solar I Project (Letter L), Blythe Solar Power Project (Letter M), Desert Quartzite Project (Letter N), Desert Sunlight Project (Letter O), and the Desert Harvest Project (Letter Q).The combined total number of acres identified for consideration in these applications, including the PSEGS, is approximately 48,294 acres. Each of these projects has identified an “action area” that includes more acreage than what would be needed for construction, operation and maintenance to allow for flexibility in final design. Should one or more of these projects be authorized, the acreage included in the ROW grant(s) would be only that which is actually needed for a project(s), not the total number of acres identified in the application(s).

Several transmission line projects and other past, present and reasonably foreseeable future activities are expected to occur within the cumulative impacts assessment area. This includes the Devers-Palo Verde No. 1 (DPV1) Transmission Line, Devers-Palo Verde 2 (DPV2) Transmission Line, Desert Southwest Transmission Line, and the Blythe Energy Project Transmission Line. For example, the DPV1 is an existing 500 kV transmission line which spans approximately 128 miles of land within California paralleling I 10 (see Figure 4.1-1, Number 4). The transmission line is within Corridors K and 30-52. DPV1 was approved by the CPUC in 1979 and constructed in 1982.

The DPV2 transmission line project was approved by the CPUC in January 2007. The project involves the construction of two 500 kV transmission lines (Figure 4.1-1, Letter D). The proposed DPV2 route is along the south side of I-10, parallel to the existing DPV1 transmission line route. The BLM issued a ROW grant for the use of public land to SCE for the DPV2 (CACA-17905) on August 11, 1989, to extend from the Devers Substation in Palm Springs to the California border and continue into Arizona; however, the portion of the line continuing into Arizona was never constructed. On September 19, 2011, the BLM issued a ROW grant (CACA-053059) for construction and operation of the DPV2 line beginning at Valley Substation in Romoland and terminating at the Colorado River Substation near Blythe, California (BLM, 2011a; BLM, 2011b).

The Desert Southwest transmission line project (Figure 4.1-1, Letter F) consists of construction of an approximate 118-mile 500 kV transmission line and two new substation/switching stations. The BLM has approved a ROW grant for the construction of the transmission line which crosses public lands between Blythe and the western end of the Coachella Valley. This transmission line would be constructed within an existing federal utility corridor. The BLM has issued a ROW grant for the project. Upon completion of plans for development and finalization of the PA entered into pursuant to NHPA Section 106, the BLM would issue a notice to proceed for this project.

The Blythe 230-kV Transmission Line Project (Figure 4.1-1, Number 10) involves building two 230-kV transmission lines spanning approximately 70 miles between the Julian Hinds and Bucks substations, and construction of a new midpoint substation. Construction on the transmission lines began in February 2009, was completed in 2010, and the line since has been energized. The transmission line lies within the existing federally-designated utility corridors along I-10.

Two substations are identified as part of the solar generating facilities in the area - the Colorado River Substation and the Red Bluff Substation. The location of the Colorado River Substation (Letter E) and the Red Bluff Substation (Letter P) is shown in Figure 4.1-1.

Reconfigured Alternative 2

The components of Reconfigured Alternative 2 are described in PSPP PA/FEIS Chapter 2 and its direct and indirect impacts are analyzed in Section 4.6.2. Reconfigured Alternative 2 includes two possible layouts referred to in the PSPP PA/FEIS as Option 1 and Option 2.

With respect to Lands and Realty, the cumulative effects of Reconfigured Alternative 2 would be similar to those of the PSEGS, with slight differences generally limited to the direct and indirect effects of the alternatives. Differences in direct and indirect impacts as compared to the PSEGS would result from Reconfigured Alternative 2’s potential use of 240 acres of private lands (Option 1 only), minor divergence of gen-tie line routes, gas line addition, redundant telecommunications cable routing, and possible relocation of SCE’s existing transmission line under the Reconfigured Alternative 2. Under all action alternatives, however, industry SOPs and BMPs would be followed for crossing over or boring under existing corridors and authorized uses which would be expected to effectively mitigate potential negative impacts to existing land use designations and authorized users.

No Action Alternative A

Under No Action Alternative A, the ROW application CACA-48810 would be denied, and the ROW grant would not be authorized. The CDCA Plan would not be amended. Under this alternative, the incremental impact of the PSEGS to lands and realty resources as described above would not be immediately realized. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project with cumulative impacts to Lands and Realty that would be similar to those described above.

4.6.4 Summary of Mitigation Measures

The APMs of the PSEGS, as well as compliance with applicable laws, ordinances, regulations, and standards; and the use of industry SOPs (e.g., NERC, WECC, etc.) and BMPs would avoid or reduce impacts associated with construction and operation of the PSEGS. Moreover, utility corridors have been designated by the BLM to accommodate such uses and to reduce overall environmental impacts that would result from the construction and operation of multiple linear facilities in multiple locations. Accordingly, additional mitigation measures are not recommended.

4.6.5 Residual Impacts after Mitigation Measures were implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.6.6 Unavoidable Adverse Impacts

Approval of the PSEGS would result in land not being available for other uses during the life of the project; however, once the project is no longer viable and is decommissioned, the land once again would be available for other uses consistent with the CDCA Plan and associated amendments.

4.7 Impacts on Mineral Resources

4.7.1 Impact Assessment Methodology

To supplement the mineral resources impacts analysis conducted in PSPP PA/FEIS Section 4.7, Impacts on Mineral Resources, applicable geologic maps were consulted to determine whether the gen-tie line reroute and natural gas supply line and metering yard would traverse different geologic formations than those analyzed in the PSPP PA/FEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.7.2, Discussion of Direct and Indirect Impacts.

4.7.2 Direct and Indirect Impacts of the PSEGS

Construction of the PSEGS would require less grading than the PSPP, but otherwise would include construction processes similar to those analyzed in the PSPP PA/FEIS. As described in Section 3.8, *Mineral Resources*, the PSEGS footprint (including the gen-tie line reroute and natural gas line addition) is within the same geologic setting as was characterized in the PSPP PA/FEIS mineral resources discussion. Further, rerouting of the gen-tie line and the addition of the natural gas supply line and metering yard do not involve new ground disturbance at a level that could affect the significance of the PSEGS's mineral resources impacts determined in the PSPP PA/FEIS. Only limited exploration for oil and gas and geothermal resources has been performed in the area, and further exploration with directional drilling or other technologies could still occur from areas adjacent to the subject site. The area is underlain by extensive sand and gravel deposits; however, adequate supplies are available in adjacent areas. For these reasons, the PSEGS is expected to have a negligible and temporary effect on the availability of sand and gravel resources, and no significant impact on the availability of geothermal or other mineral or gas resources.

4.7.3 Cumulative Impacts

PSEGS

Because the PSEGS would have a negligible and temporary effect on the availability of sand and gravel resources, and no significant impact on the availability of geothermal or other mineral or gas resources, no cumulative impacts would result for these resources.

Reconfigured Alternative 2

The geologic units that would be disturbed by Reconfigured Alternative 2 are the same as those that would be disturbed by the PSEGS, and ground disturbance would occur in roughly comparable amounts. As with the PSEGS, Reconfigured Alternative 2 would have a negligible and temporary effect on the availability of sand and gravel resources, and no significant impact on the availability of geothermal or other mineral or gas resources, no cumulative impacts would result.

No Action Alternative A

If No Action Alternative A were selected, the ROW application would be denied. The site would be expected to remain, at least for the short-term, in its existing condition, with no grading of the site, no installation of power generation or transmission infrastructure, and no new structures or facilities constructed or operated on the site. In the absence of the PSEGS, the site would remain available for solar energy development, mineral leasing, and for sales of mineral materials but would not be available for new claims to mineral resources in the near future. However, in the absence of a specific development proposal, the implications of future site development on mineral resources cannot reasonably be predicted. As discussed in Section 3.8, Mineral Resources, the site lies within a designated SEZ. Lands designated as SEZs will not be subject to appropriation under the Mining Law of 1872 until 2033.

4.7.4 Summary of Mitigation Measures

No mitigation measures are recommended.

4.7.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.7.6 Unavoidable Adverse Impacts

Approval of the PSEGS or any of the alternatives would not result in any unavoidable adverse impacts on mineral resources.

4.8 Impacts on Multiple Use Classes

4.8.1 Impact Assessment Methodology

The impact assessment methodology for multiple use classes described in PSPP PA/FEIS Section 4.8.1 (p. 4.8-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in Section 4.8.2 of the PSPP PA/FEIS (p. 4.8-2 et seq.). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.8.3, below).

4.8.2 Direct and Indirect Impacts of the PSEGS

The PSEGS would occupy or disturb approximately 3,895 acres of BLM-administered lands. All of these acres would be on MUC-M classified lands per the CDCA Plan. The impacts of the PSEGS on the MUC-M lands would be similar to those of the PSPP, in that it would convert approximately 1 percent of all MUC-M lands in Eastern Riverside County to a single use for the duration of the project. The Applicant has submitted an application to the BLM requesting a project-specific CDCA Plan amendment and ROW grant. No changes in the MUC classification would be required prior to approving the ROW grant. Nonetheless, approval of the ROW grant would restrict multiple use opportunities on the PSEGS site to a single dominant use for the lifespan of the project. This restriction would be lifted upon closure and decommissioning of the project. Thereafter, use opportunities on the site would return to pre-project conditions.

4.8.3 Cumulative Impacts

PSEGS

The geographic scope of the cumulative effects analysis for multiple use classes would include approximately 400,000 acres of the 1.5 million CDCA Plan acres in Eastern Riverside County that are designated MUC-M. Potential cumulative impacts could result from construction of the PSEGS and would continue until closure and decommissioning is complete because the proposed solar energy use would preclude other uses of the site allowed under the MUC-M designation.

Existing conditions within the cumulative impacts area reflect the MUC-M use opportunities presently being exercised and, where such opportunities are not currently being exercised, the flexibility to elect to pursue one or more among them at some point in the future. Effects of the PSEGS and other dedicated-use projects on MUCs are related to opportunity cost: if a dedicated use (such as a solar energy generation plant) is developed on the site, then the site cannot be used for other uses that otherwise would be available there.

Updated past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1. Among them, any projects that have been or would be developed on MUC-M designated land also would restrict available use opportunities within that classification for the duration of those projects. This could include renewable energy projects within Imperial, Kern, King, Los Angeles, Riverside, San Bernardino, and San Diego counties as well as other, non-energy related projects. For example, three approved utility-scale solar projects in Eastern Riverside County would be developed on MUC-M classified land: the Genesis Solar Energy Project (approximately 1,800 acres), Desert Sunlight Project (4,144 acres), and Desert Harvest Project (approximately 1,208 acres). Together with the PSEGS, approximately 11,007 acres of the 400,000-acre total (2.8 percent) would be dedicated to utility-scale solar energy generation for the duration of the projects. This preliminary quantification of potential impacts to MUC-M lands resulting from projects and other actions identified in the cumulative scenario will be updated when additional information is available. Other projects, if approved for development on MUC-M lands, would similarly dedicate MUC-M designated lands for the uses approved and thereby preclude their use for multiple uses envisioned under the CDCA Plan (e.g., mining, livestock grazing, and recreation). Cumulatively, this would be a considerable commitment of MUC-M lands.

Reconfigured Alternative 2

Option 1

This alternative would combine with the same cumulative projects as the PSEGS. Reconfigured Alternative 2 Option 1 would disturb approximately 4,125 acres of federal lands classified as MUC-M. Under this option, the total cumulative impact on MUC-M lands would be 11,277 acres, or 2.9 percent of all MUC-M lands in Eastern Riverside County. This would be a slightly greater area than the under the PSEGS but would not result in a substantially different cumulative impact.

Option 2

This alternative would combine with the same cumulative projects as the PSEGS. Reconfigured Alternative 2 Option 2 would disturb approximately 4,290 acres of federal lands classified as MUC-M. Under this option, the total cumulative impact on MUC-M lands would be 11,442 acres, or 2.9 percent of all MUC-M lands in Eastern Riverside County. This would be a slightly greater area than under the PSEGS but would not result in a substantially different cumulative impact.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no contribution to a cumulative impact on MUC-M lands would occur. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts similar to those of the PSEGS or PSPP.

4.8.4 Summary of Mitigation Measures

No mitigation measures are recommended.

4.8.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.8.6 Unavoidable Adverse Impacts

Approval of the PSEGS would result in no unavoidable adverse impacts on MUC-M lands.

4.8.7 Resource Management Plan/Land Use Plan Amendment Consistency Analysis

As discussed in Section 1.5.3 of this Draft SEIS, to accommodate the proposed action or any of the build alternatives, the CDCA Plan must be amended because sites associated with power generation or transmission not identified in the Plan will have to be considered through the Plan Amendment process. Neither the PSEGS solar plant site nor the proposed gen-tie line route currently is identified in the CDCA Plan for these intended uses. Two additional amendments are proposed to be added to this section of the CDCA, and would read “The Palen solar energy facility is allowed” and “The Palen solar facility gen-tie is allowed outside of a designated corridor.”[1] The Plan Amendment process is outlined in Chapter 7 of the CDCA Plan and described in Section 1.5.3 of this Draft SEIS.

To inform the Plan Amendment decisions, the BLM will rely on the environmental and other analysis set forth in the PSPP PA/FEIS issued by the BLM in May 2011 (Section 4.8.7 of PSPP PA/FEIS includes an analysis of the Amendment to “allow” the solar generating facility; Section 4.8.7 of the Draft SEIS includes an analysis of the Amendment to “allow” the gen-tie line outside of a designated corridor) and the consolidated Final EIS that will be prepared for the PSEGS.

As described, all of the BLM-administered lands proposed for use by the PSEGS and alternatives are classified in the CDCA Plan as MUC-M. Multiple use class designations govern the type and degree of land uses allowed within the classification area. All land use actions and resource-management activities on BLM-administered lands within a MUC delineation must meet the guidelines for that class. These guidelines are provided in Table 1, *Multiple Use Class Guidelines*, of the CDCA Plan (at page 15).

MUC-M allows electric generation plants for solar facilities to be developed in accordance with Federal, State and local regulations after NEPA requirements are met. The specific application of the Multiple Use Class designations and resource management guidelines for a specific resource or activity are further discussed in the plan elements section of the CDCA Plan. In MUC-M

1 Because the proposed natural gas line to supply the PSEGS would be less than 12-inches in diameter, no CDCA Plan amendment would be required to identify the affected area for this intended use; accordingly, the proposed natural gas line conforms to the CDCA Plan.

designations, the authorized officer is directed to use judgment in allowing for consumptive uses by taking into consideration the sensitive natural and cultural values that might be degraded.

Acknowledging that energy generation and transmission are “allowed” in MUC-M designated areas with a CDCA Plan Amendment, the land use plan consistency analysis presented in PSPP PA/FEIS Section 4.8.7 (p. 4.8-5 et seq.) applies equally to the PSEGS, with the exception of Air Quality.

Class M lands are to be managed to protect air quality and visibility in accordance with Class II objectives of Part C of the Federal Clean Air Act as amended. The anticipated maximum emissions that would be associated with the proposed action are provided in Table 4.2-4 for construction and Table 4.2-7 for operation and maintenance activities (see Section 4.2, *Impacts on Air Resources*). The analysis in Section 4.2 indicates construction emissions could contribute to exceedances of the PM_{10} standards (24-hour and annual) and could cause exceedances of the 1-hour and 24-hour NAAQSs for NO_2 and $PM_{2.5}$, respectively. The analysis also indicates PSEGS operations would contribute to existing exceedances of the PM_{10} standards (24 hour and annual) and the $PM_{2.5}$ (24-hour standard), which would represent an adverse effect to the local and regional air quality. However, these increases would not exceed USEPA thresholds for Prevention of Significant Deterioration (PSD) in Class II areas, and therefore would be consistent with the CDCA Plan.

4.9 Impacts on Noise

4.9.1 Impact Assessment Methodology

The noise impact assessment methodology used in PSPP PA/FEIS Section 4.9.1 (p. 4.9-1 et seq.) was used to analyze the PSEGS in this Draft SEIS. Additionally, this analysis includes an assessment of the effects of construction-related vibration levels at nearby sensitive uses. Groundborne vibration levels resulting from construction activities were estimated using data published by the Federal Transit Administration (FTA) in its *Transit Noise and Vibration Impact Assessment* document (FTA, 2006). Potential vibration levels resulting from PSEGS construction activities are identified at the nearest sensitive receptor based on the receptor's distance from construction activities.

The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.9.2 (pp. 4.9-5, 4.-6). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.9.3 below).

4.9.2 Direct and Indirect Impacts of the PSEGS

Noise impacts associated with the PSEGS could be created during the approximately 34-month construction period, approximately 30-year operation and maintenance period, and short-term closure and decommissioning activities. The PSEGS location and nearby sensitive receptors remain essentially the same as those identified for the PSPP; therefore, project-related effects would be the same as identified for the PSPP.

Construction

The construction period for the PSEGS would be approximately 34 months, with construction activities anticipated to commence during the fourth quarter of 2013 and conclude in June 2016. Compared to the PSPP, construction period of the PSEGS would be shorter by about 5 months but would require a higher intensity in construction efforts as well as an increase in the overall number of workers present at the project site on a daily basis. In addition, whereas the acreage of the two power plant units associated with the PSPP would be 1,380 acres each, the acreages for solar field Unit 1 and Unit 2 for the PSEGS would be approximately 1,644 acres and 1,883 acres, respectively. Thus, with the increased footprint of the solar field as a whole within the PSEGS site, the shortest distance of the nearby off-site sensitive receptors from construction activities and equipment at the site could be closer than what would have occurred for the PSPP, resulting in higher temporary noise levels at the sensitive receptor locations.

Construction activities associated with the PSEGS would increase the ambient noise levels at the identified off-site sensitive receptors. As discussed in Section 4.9.2 of the PSPP PA/FEIS (p. 4.9-2), construction noise would elevate the existing ambient noise level at the nearest receptor (LT1) by 16 dBA and at the second nearest receptor (LT2) by 5 dBA. Since the intensity of the construction activities and the solar field footprints would be greater for the PSEGS and would require more onsite workers on a daily basis, the increase in ambient noise levels at the two nearest residences also would be expected to be greater under the PSEGS compared to the PSPP.

As described in Chapter 2 of this Draft SEIS, construction activities for the PSEGS would occur from 5:00 a.m. to 3:30 p.m. with a swing shift during heliostat assembly (from 6:00 p.m. to 4:00 a.m.) and during tower construction (which may occur in three shifts around the clock until these tasks are completed). Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., tower construction, foundation pouring, or working around time-critical shutdowns and constraints). Thus, during some construction periods and during the startup phase, it is anticipated that some activities would continue 24 hours per day, 7 days per week. Consequently, there would be periods of time when the nearby residences would be exposed to noise levels from PSEGS construction continuously during night and day.

Section 4.9.4 of the PSPP PA/FEIS (p. 4.9-7) identified mitigation measures to reduce or avoid potential construction noise impacts. The PSEGS Applicant has included those mitigation measures as APMs for the PSEGS (in Appendix C of this Draft SEIS, see NOISE-1 through NOISE-7). Thus, with respect to construction noise levels, APMs NOISE-1 through NOISE-3, NOISE-6, and NOISE-7 would be implemented as part of the PSEGS to minimize the construction noise impacts on nearby sensitive receptors. In particular, APM NOISE-6 restricts heavy equipment operation and noisy construction work to between the hours of 6 a.m. to 7 p.m. on Mondays through Fridays during the months of June through September, to between the hours of 6 a.m. to 6 p.m. on Mondays through Fridays during the months of October through May, and to between the hours of 9 a.m. to 5 p.m. on Saturdays. No construction activities would be allowed on Sundays and federal holidays. However, APM NOISE-6 also stipulates that construction activities that occur outside of the aforementioned hours must obtain approval from the County of Riverside.

It should be noted that the increase in noise levels at the nearest off-site sensitive receptors during construction of the PSEGS would be temporary in nature, and would not generate continuously high noise levels, although occasional single-event disturbances from grading, trenching, and construction are possible. Additionally, while the construction noise levels at the off-site receptors locations would be the loudest when construction activities are occurring at an area within the site that is nearest to the off-site locations, the majority of the time noise levels at these off-site locations would be reduced as construction activities conclude or move to another more distant portions of the site. Thus, although construction activities would last approximately 34 months overall, the duration of the construction activities in the area that could have a considerable impact at the two nearest off-site residences (LT1 and LT2) would be limited to several months. Nonetheless, given the greater intensity of the construction efforts and increased hours of construction activities (e.g., 24-hour construction periods) at the site for the PSEGS, receptors LT1 and LT2 both would be expected to be exposed to greater construction noise levels than from the PSPP, resulting in more of a nuisance to those residences compared to the PSPP.

Additionally, similar to the PSPP, the PSEGS would involve the installation of a steam turbine generator for each of the two solar plants. "High pressure steam blow" typically would be the loudest noise encountered during construction of a project incorporating a steam turbine generator. Once the steam lines (piping and tubing) and turbine has been constructed, a series of short steam blows, lasting two or three minutes each, would be performed several times daily over a period of two or three weeks prior to connecting the steam lines to the steam turbine for operation. As discussed in Section 4.9.2 of the PSPP PA/FEIS (p. 4.9-3), unsilenced high pressure steam blows can 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. The Applicant would install a silencer on the steam blow piping; with the silencer, noise levels commonly are attenuated to 86 dBA at 50 feet.

The gen-tie line rerouting near the western end of the route, the location of the redundant telecommunications cable underground entirely in the same ROW as the gen-tie line, and the addition of a natural gas supply line would not affect the PSEGS construction noise impacts identified for the PSPP in the PSPP PA/FEIS. The construction activities and equipment used for these project components would be substantially the same as for the PSPP, and the construction areas for these project components would not be located in proximity to any noise-sensitive receptors. For these reasons, the noise levels generated by construction of these PSEGS components would have a negligible noise effect.

With respect to vibration, the primary source associated with PSEGS construction would be vibratory pile driving that would be required to insert the support pylons for the heliostats into the ground (pre-augering prior to the installation of pylons may also be required). Additionally, grading, utilities, and underground facilities construction could also generate substantial vibration levels. Consequently, the closest existing off-site sensitive receptor could be exposed to excessive groundborne vibration or groundborne noise levels related to construction activities. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to structural damage at the highest levels. Site ground vibrations from construction activities rarely reach the levels that can damage structures, but they may be perceived in buildings very close to a construction site.

LT1 would be the nearest sensitive receptor that could be impacted by construction related vibrations from the PSEGS. This receptor, while located approximately 190 feet from the northwest corner of the proposed PSEGS fence line, would be located well beyond 100 feet from the nearest project area where vibratory pile-driving activities would occur. Table 4.9-1 shows the typical vibration levels that would be produced by construction equipment.

As shown in Table 4.9-1, construction vibration levels would be less than the FTA's 0.2 inches per second peak particle velocity (PPV) threshold for damage to buildings. Because the nearest sensitive receptor would be located beyond 100 feet from the PSEGS construction activities that involve using vibratory pile drivers, construction vibrations are not predicted to cause damage to existing buildings at the sensitive receptor locations.

TABLE 4.9-1
VIBRATION LEVELS FOR VARYING CONSTRUCTION EQUIPMENT

Type of Equipment	PPV at 25 feet (inches/second)	PPV at 100 feet (inches/second)
Pile Driver (sonic/vibratory)	0.170	0.021
Large Bulldozer	0.089	0.011
Loaded Trucks	0.076	0.010
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.011
Jackhammer	0.035	0.004

NOTE: PPV = peak particle velocity

SOURCE: FTA, 2006.

Operation and Maintenance

Once operational, the PSEGS would generate relatively the same noise levels described for the PSPP, as the noise sources would essentially be the same. Similar to the PSPP, the PSEGS primary noise sources during operation would be the two power blocks where the steam turbine generators, air-cooled condensers, electric transformers, and various pumps would be located. The two power blocks of the PSEGS would be located generally in the center of each solar field and would be surrounded by heliostats. In addition, there would be diesel-powered emergency generators, which would be enclosed by a noise-reducing structure that would reduce noise levels to approximately 70 dBA at 50 feet. All water pipes and gas pipes would be underground and therefore silent during plant operation. Furthermore, as was analyzed for the PSPP, the PSEGS also would involve the operation of a 230-kV line that would embody a low corona design to minimize field strengths that would not add considerably to the current background noise levels.

Thus, similar to the PSPP analysis, operation of the PSEGS would result in a daytime noise level increase of approximately 3 dBA above the ambient noise level at the nearest sensitive receptor (LT1), and no increase above the ambient noise level at LT2. In general, a difference of 3 dBA or less is not a perceptible change in environmental noise. In addition, under the PSEGS, the nearest power blocks would be slightly farther from the residences than under the PSPP; therefore, these noise levels may be slightly reduced under the PSEGS. Therefore, the increased daytime noise level at residence LT1 would not be considered an adverse noise effect. The PSEGS would result in virtually no nighttime operations-related noise levels; however, the PSEGS would have limited nighttime activities related to maintenance. It is anticipated that the projected noise level from these maintenance activities would be the same as that disclosed in the PSPP which at LT1 is 22 dBA (PSPP PA/FEIS Section 4.9.2, p. 4.9-4). This is considerably lower than the average nighttime ambient noise level of 34 at LT1 (see PSPP PA/FEIS Table 3.10-1, p. 3.10-1). Furthermore, as part of the PSEGS, APMs NOISE-4 and NOISE-5 would be implemented to ensure that plant operation noise would not exceed an average of 42 dBA L_{eq} at LT1 and that an occupational noise survey would be conducted to identify any noise hazardous areas in the facility, respectively.

In terms of ground-borne vibration generated from the operation of the PSEGS, the primary on-site sources would be the two steam turbine generators and their associated pumps. Similar to the PSPP, it is not anticipated that the ground-borne vibration generated from operation of the PSEGS would be detectable by any off-site sensitive receptors. Similar to the PSPP, permanent vibration sensors would be attached to the turbines and generators for the PSEGS. In addition, none of the project equipment is anticipated to produce noticeable air borne vibration (low frequency noise) beyond the site boundary, which makes it highly unlikely that the project would cause perceptible airborne vibration effects at any off-site sensitive receptor.

Closure and Decommissioning Impacts

As discussed in PSPP PA/FEIS Section 4.9.2 (p. 4.9-5), all operational noise at the site would cease when the plant facilities close, and no further adverse noise impact from its operation would occur. It is assumed that decommissioning and reclamation of the permanent plant facilities would begin 30 to 50 years after the commercial operation date of the solar plant. Short-term noise levels would be generated at the project site during the dismantling of the project structures and equipment, as well as any site restoration work that may be performed. The noise levels generated would be similar to that caused by the original construction work for the PSEGS, and thus would be similarly managed with the project's APMs. In addition, any local, state or federal noise laws and regulations in existence at that time also would apply.

4.9.3 Cumulative Impacts

PSEGS

Noise and vibration impacts resulting from construction, operation, maintenance, and decommissioning of the PSEGS could result in a cumulative effect with other past, present, or reasonably foreseeable future actions (see Section 4.1.3, *Cumulative Scenario Approach*). Cumulative projects are identified in Table 4.1-1, *Cumulative Scenario*, and shown in Figure 4.1-1. As noise and vibration are localized phenomena, and drastically reduce in magnitude as distance from the source increases, only other cumulative projects in the nearby area could combine with the proposed action to result in cumulative noise effects. As noted in PSPP PA/FEIS Section 4.9.3 (p. 4.9-7), the geographic scope of the cumulative effects analysis for noise and vibration is limited to the distance over which sounds generated by the proposed action or an alternative could be heard, i.e., within approximately 1 mile of the project site. Potential cumulative effects could occur during the proposed 34-month construction period for the PSEGS, during its projected 30-50 year lifespan, or during the closure and decommissioning period if noise-generating activities from other cumulative projects located within the identified cumulative effects area were to occur. As of May 2013, there were 106 renewable projects proposed in California in various stages of environmental review or under construction, down from the 244 identified in the PSPP PA/FEIS.

The PSPP PA/FEIS concluded that no cumulative noise or vibration impacts would be created because no existing or foreseeable projects are located within the cumulative effects area of the project site. As this would also be true for the PSEGS, no cumulative noise or vibration effect would be generated in the cumulative effects area. Consequently, the incremental noise impacts of the PSEGS would not combine with impacts of other cumulative projects in a way that would be additive, countervailing, or synergistic.

Reconfigured Alternative 2

Option 1

As the project site location for Reconfigured Alternative 2 Option 1 would be substantially the same as the PSEGS, the cumulative noise effects also would be comparable to it. As discussed above, because no existing or foreseeable projects are located within the cumulative effects area of the project site, no cumulative noise or vibration impacts would be created.

Option 2

As the project site location for Reconfigured Alternative 2 Option 2 would be substantially the same as the PSEGS, the cumulative noise effects also would be comparable to it. As discussed above, because no existing or foreseeable projects are located within the cumulative effects area of the project site, no cumulative noise or vibration impacts would be created.

No Action Alternative A

As discussed previously, if No Action Alternative A was selected, the PSEGS would not occur at the project site. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project. Nonetheless, because no existing or foreseeable projects are located within the cumulative effects area of the project site, no cumulative noise or vibration impacts would be created.

4.9.4 Summary of Mitigation Measures

NOISE-8: Construction activities occurring outside of the permitted construction hours identified in the County of Riverside Municipal Code shall be located as far from sensitive receptors as feasible. If 24-hour construction activities are to be conducted in the immediate vicinity of sensitive receptors, construction specification requirements shall include installation and maintenance of a temporary noise barrier (e.g. engineered sound wall or noise blanket) between the noise source and the receptor, to the extent feasible. The noise barrier shall be erected to a height that intercepts the line of sight between the construction site and sensitive receptors in order to achieve maximum noise attenuation.

NOISE-9: Construction activities occurring outside of the permitted construction hours identified in the County of Riverside Municipal Code and within the vicinity of existing residences shall not include the use of impact or vibratory construction equipment that generates high peak noise and vibration levels. Examples include the use of pile-drivers and jackhammers.

NOISE-10: Blasting activities shall be prohibited outside of the permitted construction hours identified in the County of Riverside Municipal Code.

4.9.5 Residual Impacts after Mitigation Measures were Implemented

Implementation of Mitigation Measures NOISE-8 through NOISE-10, in addition to the applicable APMs for construction noise (i.e., APMs NOISE-1 through NOISE-3, and NOISE-6 and NOISE-7), would reduce the construction noise nuisance at nearby sensitive receptors due to the PSEGS. However, because there would be periods where construction activities associated with the PSEGS would occur as early as 5:00 a.m. and other periods where construction activities would occur for 24 hours per day for 7 days per week, which would be outside of the permitted construction hours identified in the County of Riverside Municipal Code, the two off-site residences would be exposed to increased noise levels during nighttime hours. In particular, LT1, which is located approximately 25 feet from the northwest corner of the proposed ROW boundary, could be exposed to noise levels that exceed the established nighttime exterior noise standard of 45 dBA L_{eq} for residential uses as specified in the County of Riverside Municipal Code.

No residual impact would result from operation of the PSEGS because implementation of APMs NOISE-4 and NOISE-5 would ensure that the PSEGS Project's operational noise levels would comply with applicable limits.

4.9.6 Unavoidable Adverse Impacts

The PSEGS would result in unavoidable adverse impacts during periods where construction activities at the site occur outside of the permitted construction hours identified in the County of Riverside Municipal Code.

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4.10 Impacts on Paleontological Resources

4.10.1 Impact Assessment Methodology

The paleontological resources impact assessment methodology used in the PSPP PA/FEIS Section 4.10.1 (p. 4.10-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.10.2 (pp. 4.10-2, 4.10-3). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.10.3 below).

4.10.2 Direct and Indirect Impacts of the PSEGS

The paleontological resource impact analysis presented in the PSPP PA/FEIS determined that there is high probability that paleontological resources would be encountered during grading and excavation in the older Quaternary age alluvial sediments of the PSPP site and during deeper excavations that might reach the older buried Quaternary age alluvial soils. For much of the project area, the depth to high sensitivity soils is unknown. As such, PSPP PA/FEIS Section 4.10.2 (p. 4.10-1) assumed that any excavations that penetrate below 1.5 feet of the existing ground surface would have a high potential for impacting significant paleontological resources and would require paleontological monitoring.

The PSEGS includes several ground disturbing activities proposed for areas beyond the previously analyzed PSPP site, and therefore not considered in the PSPP PA/FEIS. These include, for example, the gen-tie line reroute, the redundant telecommunications cable, and the natural gas pipeline, among other activities. Due to ground disturbance, each of these activities could affect paleontological resources. The tower foundations for the gen-tie line reroute would require ground disturbance to a depth of 6 feet, for a total disturbance area of 109 acres. The redundant telecommunications cable would be buried beneath the gen-tie line route and require 8 linear miles of trenching to a depth of 3 feet. The proposed natural gas pipeline would extend 0.56 miles and be buried to a depth of between 3 and 12 feet, depending upon location, which would result in a disturbance area of approximately 3.6 acres (Galati, 2013). Within the solar plant site, auguring for the heliostat support pylons could extend to a depth of 12 feet. Alternatively, the support pylons could be placed into the ground using vibration, in which case no dirt would be displaced and impacts to any paleontological resources would be unknown.

Since the PSPP PA/FEIS was issued, many discoveries have been made of paleontological resources on or just below the surface of other solar project sites along the I-10 corridor. The depth of the Quaternary Age sediments within the requested ROW for the PSEGS is unknown and those sediments have not been adequately characterized; therefore, the effects of the PSEGS on paleontological resources within those sediments are unknown.

Due to the high probability for paleontological resource discovery, PSPP PA/FEIS Section 4.10.4 (p. 4.10-4) identified several mitigation measures to reduce potential impacts to these resources. The Applicant has proposed to implement all of these measures as part of the PSEGS. These measures, referred to in this Draft SEIS as APMs PAL-1 through PAL-7, include the preparation and implementation of a Paleontological Resource Monitoring and Mitigation Plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources, among other measures. Together, the APMs are intended to ensure the appropriate removal and curation of the resources, if encountered. The full text of all of the APMs is set forth in Appendix C.

While the PSEGS elements are not proposed for areas of known fossil collection sites, the potential remains for inadvertent discovery or disturbance. All of the mitigation measures prescribed for paleontological resources in the PSPP PA/FEIS would apply equally to the PSEGS via implementation of the APMs identified in Appendix C. elements described above, as well as those ground disturbing activities that would occur within the previously analyzed project site. Although the PSEGS's impacts to paleontological resources are unknown, implementation of the APMs, is intended to reduce the significance of such impacts.

4.10.3 Cumulative Impacts

PSEGS

Beneficial and adverse impacts on paleontological resources resulting from construction, operation, maintenance and decommissioning of the PSEGS could result in a cumulative effect with other past, present or reasonably foreseeable future actions. See Section 4.1.4. Cumulative projects are identified in Table 4.1-1, *Cumulative Scenario*, and shown in Figure 4.1-1, *BLM Rights of Way with Existing and Future/Foreseeable Projects*. The value of paleontological resources is associated with their discovery within a specific geologic host unit. To the extent that paleontological resources are discovered intact and adequately preserved, the cumulative contribution to the science of paleontology would be beneficial. However, if such resources are destroyed in the course of subsurface disturbance, the loss would be permanent. The APMs described above have been designed to facilitate early discovery and avoidance of adverse effects to such resources (except in the heliostat fields, where use of vibration to insert support pylons could damage undetected paleontological resources). With appropriate measures in place, construction and other ground-disturbing activities associated with past and present projects could add to fossil discoveries which would enhance our understanding of the prehistoric climate, geology, and geographic setting of the region for the benefit of current and future generations.

Reconfigured Alternative 2

The geologic units that would be disturbed under Reconfigured Alternative 2 also underlie the PSPP. The mitigation measures identified in PSPP PA/FEIS Section 4.10.4 (p. 4.10-4 et seq.) for the PSPP also would apply to the implementation of Reconfigured Alternative 2 (Option 1 or Option 2), and are the same as the measures that would be implemented for the PSEGS via the

APMs. As a result, the cumulative effects of Reconfigured Alternative 2 (Option 1 or Option 2) would be similar to those described for the PSEGS.

No Action Alternative A

Under No Action Alternative A, the ROW application would be denied. No site disturbance would occur and no impacts to paleontological resources would be expected. However, because the site lies within the Riverside East SEZ, it is reasonable to expect that the BLM would receive a subsequent ROW application for a different solar project. The cumulative effects of such a project would vary based upon the extent of subsurface disturbance and the types of measures prescribed for early detection, collection, and curation of paleontological resources.

4.10.4 Summary of Mitigation Measures

No additional mitigation measures are required.

4.10.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.10.6 Unavoidable Adverse Impacts

Although approval of the PSEGS would result in no unavoidable adverse impacts on known paleontological resources, the Quaternary Age deposits within the requested ROW are neither defined nor adequately characterized. Therefore, unavoidable adverse impacts to paleontological resources could result from implementation of the PSEGS.

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4.11 Public Health and Safety

This section supplements the analysis in PSPP PA/FEIS Section 4.11 (p. 4.11-1 et seq.) of environmental consequences associated with impacts on public health and safety. This section considers potential impacts of the PSEGS on the following issue areas: hazardous materials/hazardous waste, waste management, unexploded ordnance (UXO), undocumented immigrants (UDI), transmission line safety and nuisance, traffic and transportation safety, worker safety and fire protection, and geologic hazards. The approach for each of these issues is described below.

4.11.1 Hazardous Materials

4.11.1.1 Impact Assessment Methodology

The methodology described in PSPP PA/FEIS Section 4.11.2.1 (p. 4.11-1) was used to assess impacts to public health and safety resulting from the presence of hazardous materials associated with the PSEGS in this Draft SEIS. The PSPP PA/FEIS analysis considers whether the construction and operation of the PSPP could affect public health and safety as a result of the use, handling, transportation, or storage of hazardous materials. Of primary consideration for hazardous materials are: (1) the risk of accidents and spills, (2) chronic non-cancer health effects, and (3) cancer health risks. The following section describes the public health implications of the PSEGS for each of these factors. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in Section 4.11.2.2 of the PSPP PA/FEIS (pp. 4.11-18, 4.11-19). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.1.3, below).

4.11.1.2 Direct and Indirect Impacts of the PSEGS

Risks of Leaks and Spills during Construction

Multiple chemicals will be stored and used onsite during construction of the PSEGS. The types and quantities of hazardous materials that would be used during construction for the PSEGS are similar in type and quantity as those proposed for the PSPP and analyzed in the PSPP PA/FEIS. Most of the hazardous materials that would be used during PSEGS construction, although present at the proposed facility, would pose a minimal potential for off-site impacts since they would be stored in either solid form or in small quantities, have low mobility, low vapor pressure, or low levels of toxicity. These hazardous materials, which were eliminated from further consideration, are discussed briefly below.

During the construction phase of the PSEGS, the only hazardous materials proposed for use include paint, cleaners, solvents, gasoline, diesel fuel, motor oil, welding gases, and lubricants. Any impact of spills or other releases of these materials would be limited to the site because of the small quantities involved, the infrequent use and hence reduced chances of release, and/or the temporary containment berms that would be used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel all have very low volatility and would represent limited off-site hazards, even in larger quantities.

Risks of Leaks and Spills during Operation

The hazardous materials that would be used during operation of the PSEGS are similar in type, but and generally less in quantity than those analyzed in the PSPP PA/FEIS. A list of materials that would be stored onsite during PSEGS operation is provided in Table 4.11-1. A notable distinction between the PSPP and PSEGS proposals is the latter's elimination of Therminol VP-1TM and liquefied petroleum gas for project operations.

During operations, hazardous chemicals such as cleaning agents, lube oil, sulfuric acid, sodium hydroxide, ammonium hydroxide, diesel fuel and other various chemicals (see Table 4.11-1 for a complete list) would be used and stored on-site and would represent a limited off-site hazard due to their small quantities, low volatility, and/or low toxicity.

Natural gas, while not proposed for storage at the PSEGS site, represents the largest quantity of hazardous materials proposed for use by the PSEGS.

Natural gas poses a fire and/or possible explosion risk because of its flammability. Composed mostly of methane, natural gas also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and lighter than air. Natural gas can cause asphyxiation when methane's concentration exceeds 90 percent. Methane is flammable when mixed in air at concentrations of 5-14 percent, which is also its detonation range. Natural gas therefore poses a risk of fire and/or explosion if a release were to occur under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees, 1998), natural gas is less likely to result in an unconfined vapor cloud explosion than many other fuel gases such as propane or liquefied petroleum gas although an unconfined vapor cloud of natural gas can explode under certain conditions.

Noted above, while natural gas would be used in significant quantities, it would not be stored on site. It would be delivered through a new 8-inch pipeline extension from an existing SoCal Gas pipeline to a proposed PSEGS metering station to be located within the common area, a distance of approximately 0.56 miles. The pipeline would be buried to a depth of between 3 and 12 feet below the ground surface, depending upon location. The risk of a fire and/or explosion on-site can be reduced levels through adherence to applicable regulations (i.e., 49 CFR Parts 190-192) and the development and implementation of effective safety management practices.

The PSEGS proposes the use of both engineering and administrative controls to minimize the potential for accidental releases of hazardous materials and procedures for timely response and cleanup in the event of a release. Engineering controls include structural elements, such as the construction of chemical storage and feed areas to contain leaks, spills, and stormwater; the use of concrete containment pits and drain piping that will allow a full tank capacity spill without overflowing containment; and the use of isolated drain piping for reactive chemicals to prevent and eliminate noxious or toxic vapors. Administrative controls would include training of plant

TABLE 4.11-1
HAZARDOUS MATERIALS PROPOSED FOR STORAGE ONSITE DURING OPERATIONS

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[a]
Aqueous Ammonia (19 percent)	1336-21-6	pH control for boiler chemistry	Health: Major injury likely unless prompt action is taken and medical treatment given Physical: minimally reactive	1,600 gallons	1,000 pounds
Avista Vitec	Not available	Reverse osmosis scale inhibitor	Health: Temporary or minor injury may occur Physical: minimally reactive	900 gallons	1,000 pounds
Diesel Fuel	68476-34-6	Emergency generator	Health: low toxicity Physical: combustible liquid	40,000 gallons	N/A
Hydraulic Fluid	64741-89-5	Miscellaneous equipment control oil	Health: low to moderate toxicity Physical: Class IIIB combustible liquid	6,00000 gallons	N/A
Lube Oil	64742-65-0	Miscellaneous equipment lubrication	Health: low toxicity Physical: N/A	30,000 gallons	N/A
Mineral Insulating Oil	8042-47-5	Provides overheating and insulation protection for transformers	Health: low toxicity Physical: N/A	112,000 gallons	N/A
Nalco Elimin-OX Oxygen Scavenger Carbohydrazide (5-10 percent)	497-18-7	Boiler chemistry control	Health: low toxicity Physical: ignitability	1,600 gallons	30,670 pounds
Nalco 5200M (Anti-scalant) Sodium salt of phosphonomethylated diamine	Not available	Wastewater treatment	Health: Temporary or minor injury may occur Physical: low flammability	1,500 gallons	10,000 pounds
Nalco 3DT-187 (Corrosion Inhibitor) Phosphoric acid, Substituted aliphatic aldehyde	7664-38-2; not available	Wet-Surface Air Cooler (WSAC) Corrosion inhibitor	Health: Temporary or minor injury may occur Physical: low flammability	2,100 gallons	5,000 pounds (Phosphoric acid)
Nalco 73801WR (Dispersant) Alkyl amine diol, Substituted aromatic amine	Not available	WSAC Dispersant	Health: Major injury likely unless prompt action is taken and medical treatment given Physical: corrosive, slightly flammable	2,100 gallons	Nalco 73801WR (Dispersant) Alkyl amine diol, Substituted aromatic amine
Nalco TRAC107 (Corrosion Inhibitor) Sodium hydroxide, Inorganic salt	1310-73-2; not available	Closed cooling water Corrosion Inhibitor	Health: Temporary or minor injury may occur Physical: corrosive	500 gallons	1,000 pounds (Sodium hydroxide)

TABLE 4.11-1 (Continued)
HAZARDOUS MATERIALS PROPOSED FOR STORAGE ONSITE DURING OPERATIONS

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	CERCLA SARA RQ[a]
Nalco 7468 (Antifoaming agent) Hydrated silica	10279-57-9	Wastewater treatment system anti-foaming agent	Health: no significant risk Physical: slight flammability	1,500 gallons	10,000 pounds
Sodium Bisulfite	7631-90-5	Dechlorination	Health: Temporary or minor injury may occur Physical: N/A	900 gallons	5,000 pounds
Sodium Hydroxide (50 percent)	1310-73-2	pH control	Health: high toxicity Physical: corrosive, reactive	2,400 gallons	1,000 pounds
Sodium Hypochlorite 12% (trade) solution	7681-52-9	Biocide	Health: Major injury likely unless prompt action is taken and medical treatment given Physical: corrosive, reactive	2,400 gal	100 pounds
Sulfuric Acid 93% (66° Baumé)	7664-93-9	pH control	Heath: Major injury likely unless prompt action is taken and medical treatment given Physical: corrosive, reactive	2,400 gallons	1,000 pounds
Sulfuric Acid (29.5 percent)	7664-93-9	Contained in batteries	Health: high toxicity Physical: corrosive and water reactive	Contained in batteries; 12,000 gallons	1,000 pounds

SOURCE: Palen Solar III, LLC, 2013a

personnel in the proper handling of chemicals and procedures to follow in case of accidental release; and the provision of safety showers, eyewash stations, personal protective equipment, and absorbent materials for spill cleanup (Palen Solar III, 2013a).

In addition, the Applicant has incorporated into the PSEGS as APMs all of the mitigation measures identified in the PSPP PA/FEIS relating to public health and safety. Set forth in Appendix C, these include limitations on the types of chemicals that can be used onsite; and development and implementation of a Spill Prevention, Control, and Countermeasure Plan (SPCC) and a Safety Management Plan, among other plans (see HAZ-1, HAZ-2, and HAZ-3). With these controls in place, the potential for spills and other releases of hazardous materials would be minimized and offsite impacts to public health prevented.

Health Risk Assessment for Operations

The Applicant generated cancer risk and chronic and acute hazard index values for a hypothetical maximum exposed individual (MEI) located at the maximum impact receptor (MIR). The hypothetical MEI is described as "an individual assumed to be located at the MIR location, which is assumed (for purposes of this worst-case analysis) to be a residential receptor where the highest concentrations of air pollutants associated with PSEGS emissions are predicted to occur, based on the air dispersion modeling" (Palen Solar Holdings, 2013). The MIR identified for the PSEGS analysis is located southeast of the proposed Common Facilities Area, between the project site and I-10. The nearest residential receptor is located at the northwest corner of the project site (at the edge of a solar array). No non-residential sensitive receptors were identified within 6 miles of the site. The results of the health risk assessment are summarized in Table 4.11-2.

TABLE 4.11-2
PSEGS HEALTH RISK ASSESSMENT SUMMARY

Type of Hazard/Risk	Hazard Index/Risk	Adverse Effect Level	Adverse?
Acute Noncancer	0.00011	1.0	No
Chronic Noncancer	0.00253	1.0	No
Individual Cancer	4.03 in 1 million	10 in 1 million	No

SOURCE: Palen Solar Holdings, LLC, 2013.

As the table indicates, the Applicant's screening health risk assessment for the PSEGS identified a maximum acute hazard index of 0.00011 and a maximum chronic hazard index of 0.00253 for the MEI at the MIR (Palen Solar Holdings, 2013). The maximum remotely possible cancer risk was found to be 4.03 in 1,000,000. Both acute and chronic hazard indices are below the adverse effect level of 1.0, and cancer risk is below the adverse effect level of 10 in 1,000,000, indicating that no short- or long-term adverse health effects would be expected.

Health Risk from Construction Phase

For the construction phase analysis, atmospheric dispersion modeling of DPM emissions from construction equipment and vehicles was conducted by the Applicant using the AERMOD Model. The majority of $PM_{2.5}$ emissions that would be generated during construction would be DPM due to the use of diesel off-road equipment and vehicles; a small percentage of the $PM_{2.5}$ emissions would be associated with gasoline exhaust and fugitive dust. As described in Table 4.2-4 (see Section 4.2), maximum day concentrations of $PM_{2.5}$ due to PSEGS construction activities could contribute to an exceedance of the federal 24-hour $PM_{2.5}$ ambient air quality standard (AAQS). In terms of mass emissions, the estimated on-site $PM_{2.5}$ exhaust from construction equipment and support vehicles over the estimated 33-month construction period is estimated to be 13 tons. The corresponding daily $PM_{2.5}$ emission rate for exhaust emissions from onsite construction equipment and vehicles is expected to be approximately 26 pounds per day, averaged over the 33-month construction period. Although construction activities could contribute to a short-term exceedance of the federal 24-hour AAQS for $PM_{2.5}$, considering that the residential exposure period for identifying health risks is over a 70-year lifetime, this rate of short-term exposure would not be considered adverse in terms of public health.

Cooling Towers

As described in PSPP PA/FEIS Section 4.11.2.2 (p. 4.11-16), industrial water cooling systems, including that proposed for the PSEGS, have the potential to support bacterial growth if not properly treated. Legionella is a bacterium that is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. It is the principal cause of legionellosis, otherwise known as Legionnaires' Disease, which is similar to pneumonia. Transmission to people results mainly from inhalation or aspiration of aerosolized contaminated water.

Legionella can grow symbiotically with other bacteria and can infect protozoan hosts. This provides Legionella with protection from adverse environmental conditions, including making it more resistant to water treatment with chlorine, biocides, and other disinfectants. Thus, if not properly maintained, cooling water systems and their components can amplify and disseminate aerosols containing Legionella.

To minimize the potential for bacterial growth in the PSEGS water cooling system, the Applicant would prepare and implement a Cooling Management Plan. Treatment measures would include preventive maintenance, the use of biocides and anti-biofilm monitoring. As described in Appendix C (see APM PUBLIC HEALTH-1), the plan would include sampling and testing for the presence of Legionella bacteria at least every 6 months. Implementation of these measures would ensure that the potential for worker and general public exposure is minimized and kept to below significant levels.

4.11.1.3 Cumulative Impacts

PSEGS

Impacts resulting from construction, operation, maintenance, and decommissioning of the project could result in a cumulative impact relating to hazardous materials, including the use, storage, and transport of hazardous materials, with other past, present, or reasonably foreseeable future actions. For example, cumulative impacts would exist or could result from the interaction of one or more controlled or uncontrolled release of hazardous materials, e.g., airborne or subsurface plumes, within the same geographic area, and during the same timeframe. The geographic area of the cumulative impacts analysis area for hazardous materials management includes the Mojave Desert Air Basin for airborne hazards and, for waterborne hazards, the watershed and groundwater basin. The relevant timeframe within which incremental impacts could be additive, synergistic or otherwise combine includes the construction period for the PSEGS, its anticipated 30-50 year lifespan, and the period of time required for closure and decommissioning of the PSEGS.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions and are described in the Chapter 3. Direct and indirect effects of the PSEGS are analyzed above. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.4, *Cumulative Scenario Approach*.

The only nearby existing source of emissions is Interstate 10, a major route for trucks delivering goods to and from California, located about 0.5 mile south of the PSEGS site. This source is located close enough to the 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 cumulative impacts is extremely low. In addition, the point of maximum individual exposure by the Applicant was located near the northern facility fence line, about 2 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 (Palen Solar Holdings, LLC, 2013). The cumulative impacts of the PSEGS combined with I-10 emissions would not be substantial.

A considerable amount of future development is planned in the general area of the site, including more than 15 other solar power plants. However, no foreseeable projects are planned in the immediate vicinity of the PSEGS. The nearest planned project is the Chuckwalla Solar I project (see Figure 4.1-1, Letter J) whose eastern boundary would be about 1.5 miles northwest of the PSEGS's western boundary. Given the distance between the projects, there is little to no potential for cumulative impacts to occur during construction. Cumulative impacts resulting from the operations phase of the PSEGS could occur if future facilities emitting TACs were located within 0.5 mile of the PSEGS site. None of the future foreseeable projects are close enough to meet this criterion, and so none is likely to cause or contribute to a cumulative impact. Decommissioning of the PSEGS is not expected to result in adverse impacts related to public health. It is unlikely that the decommissioning of any of the cumulative projects would occur concurrently with the PSEGS, because the decommissioning is not expected to occur for approximately 30-50 years. As a result, it is not expected that significant impacts related to public health during decommissioning of the project generated by the cumulative projects would occur.

Reconfigured Alternative 2

The direct and indirect emissions of Reconfigured Alternative 2, if constructed, would be substantially similar to those of the PSEGS. As the projects would be similar in generating capacity, similarly located, and occur within a similar timeframe as the PSEGS, the cumulative contribution of either Option 1 or 2 would expected to be similar to that of the PSEGS. For the reasons described above, Reconfigured Alternative 2 would likely have very localized cumulative public health impacts with respect to hazardous materials, generally limited to emissions of DPM.

No Action Alternative A

Under this alternative, the BLM would deny the PSEGS ROW application and no solar power plant, transmission line, or gas line would be constructed pursuant to that application. However, because the ROW application area lies within the Riverside East SEZ, it is reasonable to expect that some sort of solar energy project may be proposed for the site in the future. The cumulative contribution to public health impacts from hazardous materials would vary based upon the size and scale of the later-proposed project, the types and quantities of chemicals stored on site, and the types and quantities of emissions generated. If no project were to be constructed, there would be no cumulative contribution to public health impacts.

4.11.1.4 Summary of Mitigation Measures

Applicant Proposed Measure HAZ-3 presently limits the safety management plan to hazardous materials delivered by tanker truck. The PSEGS would utilize hazardous materials beyond those delivered by tanker truck. For this reason, the measure requires revision to include natural gas, which would be delivered by pipeline. The revised measure is provided below.

> **HAZ-3, Safety Management Plan:** The project owner shall develop and implement a Safety Management Plan for the delivery and handling of liquid and gaseous hazardous materials delivered by tanker truck **or pipeline**. 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.

4.11.1.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.1.6 Unavoidable Adverse Impacts

Unavoidable impacts would be the same as those identified in the discussion of direct and indirect effects, above.

4.11.2 Waste Management

4.11.2.1 Impact Assessment Methodology

The waste management impacts assessment methodology described in PSPP PA/FEIS Section 4.11.3 (p. 4.11-22 et seq.) was used to analyze the PSEGS in this Draft SEIS. It focuses primarily on landfill capacity and compliance with waste management regulations. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.11.3.2 (pp. 4.11-25, 4.11-26). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.2.3, below).

4.11.2.2 Direct and Indirect Impacts of the PSEGS

PSEGS wastes would be comprised of solid and liquid non-hazardous wastes, as well as lesser amounts of hazardous and universal wastes. Hazardous materials to be stored onsite are discussed in Section 4.11.1, above.

The construction period for the PSEGS is expected to be 34 months, slightly shorter than the expected 39 months for construction of the PSPP. Construction is proposed to begin at the end of 2013 and conclude in June 2016. Hazardous and non-hazardous wastes generated during construction are listed in Table 4.11-3. Table 4.11-4 lists hazardous and non-hazardous wastes expected during operation of the facility. An assumed operation lifetime of 30 years was used to calculate total amounts of waste generated over the lifetime of the facility.

TABLE 4.11-3
SUMMARY OF CONSTRUCTION-GENERATED WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream	Origin and Composition	Estimated Amount	Waste Management Method	
			Onsite	Offsite
Non-Hazardous[a]				
Scrap wood, steel, glass, plastic, paper, calcium silicate insulation, mineral wool insulation	Normal refuse from construction of facility	180 tons/ 900 cubic yards	None	Recycle and/or dispose of in a Class II or III landfill
Scrap metals	Parts and containers from construction of facility	1 ton per month/ 113 cubic yards	None	Recycle and/or dispose of in a Class III landfill
Unused concrete	Rock, sand, cement from power tower and building foundation construction	Less than 1,000 pounds per month/14 cubic yards	None	Recycle or dispose of in a Class III landfill
Sanitary waste	Sewage sludge from portable toilets	200 gallons per day/68 cubic yards	None	Remove by contracted sanitary service
Universal Waste[a]				
Spent alkaline batteries	Batteries containing heavy metals such as alkaline dry cell, nickel-cadmium, or lithium ion.	50 per month/ 0.1 cubic yards	None	Recycle or dispose offsite at a Universal Waste Destination Facility
Spent Fluorescent, mercury vapor lamps	Metals and polychlorinated biphenyls (PCBs) in lamps from construction lighting	100 pounds per year/0.5 cubic yards	None	Recycle or dispose offsite at a Universal Waste Destination Facility
Hazardous[a]				
Empty hazardous materials containers	5-gallon or 55-gallon drums, containers, totes from construction of facility	100 containers/ 50 cubic yards (5-gallon assumed)	None	Containers < 5 gallons will be disposed as normal refuse. Containers > 5 gallons will be returned to vendors for recycling or reconditioning
Spent welding materials	Solid materials from welding during construction	1 ton/3 cubic yards	None	Disposal at a Class I landfill
Waste oil filters	Metal casings and filter material from construction equipment and vehicles	200 pounds per month/20 cubic yards	None	Recycle at a permitted treatment, storage, and disposal facility (TSDF)
Used and waste lube oil	Oil from ST lube oil flushes and equipment vehicles	12,000 gallons/ 59 cubic yards	None	Recycle at a permitted TSDF
Oily rags, oil sorbent excluding lube oil flushes	Oil and materials from cleanup of small spills	3,000 pounds/ 17 cubic yards	None	Recycle or dispose at a permitted TSDF
Solvents, paint, adhesives	Various	180 pounds per month/4 cubic yards	None	Recycle at a permitted TSDF
Spent lead-acid batteries	Heavy metals from equipment/truck batteries	10 batteries per year/0.1 cubic yards	None	Store no more than 10 batteries (up to 1-year) - Recycle offsite

TABLE 4.11-3 (Continued)
SUMMARY OF CONSTRUCTION-GENERATED WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream	Origin and Composition	Estimated Amount	Waste Management Method	
			Onsite	Offsite
Hazardous (cont.)[a]				
Steam turbine cleaning waste	Corrosive cleaning chemicals for pre-boiler piping	200 gallons/ 1 cubic yard	None	Dispose at a permitted TSDF
Passivating and chemical cleaning fluid waste	Variable composition from pipe cleaning and flushing	200,000-400,000 gallons/up to 250 cubic yards	Sample and characterize—if clean (meets regulatory standards), discharge to the surrounding area or use for dust control	If hazardous, manage appropriately offsite
Hydrotest water	Water used when testing equipment and piping integrity	400,000 gallons/250 cubic yards	Sample and characterize—if clean, (meets regulatory standards) discharge to the surrounding area or use for dust control	If hazardous, manage appropriately offsite

NOTE:
[a] Classification under Title 22 CCR Division 4.5, Chapters 11, 12, and 23.

SOURCE: Palen Solar III, 2013b; Palen Solar III, 2013a; U.S. EPA, 1997; CalRecycle, 2004; Waste Management, 2013.

TABLE 4.11-4
SUMMARY OF OPERATIONS-GENERATED WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream	Origin and Composition	Estimated Amount (increment/total over life of operation)	Waste Management Method	
			Onsite	Offsite
Non-Hazardous[a]				
Deionization Trailer unit	Metal and resins from water treatment process	1 trailer every two weeks	None	Recycled by water treatment manufacturer
Condensate polishing vessels	Metal and resins from water treatment process	Multiple vessels every two weeks	None	Recycled by water treatment manufacturer
Operating Area Wash Down	Detergents, soluble oil, and suspended solids derived from evaporation of plant wash down water	1,358 gallons per day/11,616 cubic yards	Collect solids in evaporation ponds	Transport all collected solids off-site for disposal by certified solid waste treatment facility when plant is decommissioned
Onsite sanitary sewage treatment system	Sanitary wastewater/sewage	1,400 gallons per day/5040 cubic yards	Septic tank	Contents of septic tank will be removed by sanitary hauler as needed
Hazardous[a]				
Lubricating oil	Oil from small leaks and spills from the steam turbine lubricating oil system and routine maintenance of the steam turbine	600 gallons per maintenance event	None	Recycled by certified oil recycler
Lubricating oil filters	Paper, metal, oil from steam turbine lubricating oil system	1,500 lbs per year/131 cubic yards	None	Recycled by certified oil recycler

TABLE 4.11-4 (Continued)
SUMMARY OF OPERATIONS-GENERATED WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream	Origin and Composition	Estimated Amount (increment/total over life of operation)	Waste Management Method	
			Onsite	Offsite
Hazardous[a]				
Solvents, paint, adhesives	Various	180 pounds per month/154 cubic yards	None	Recycle at a permitted TSDF
Oily rags	Rags used during maintenance and wipe down of equipment	900 pounds per year/154 cubic yards	None	Recycled by certified oil recycler
Oil sorbents	Hydrocarbons from cleanup of small spills	600 pounds per year/9 cubic yards	None	Recycled or disposed of by certified oil recycler

NOTE:
[a] Classification under Title 22 CCR Division 4.5, Chapters 11, 12, and 23.

SOURCE: Palen Solar III, 2013a, 2013c; U.S. EPA,1997; CalRecycle, 2004; Waste Management, 2013.

During construction of the PSEGS, approximately 1,095 cubic yards of recyclable and non-recyclable non-hazardous waste would be generated. Non-hazardous waste generated during operations will be either recycled by the water treatment manufacturer and therefore will not be sent to surrounding waste facilities, or will be removed once upon site decommissioning in the case of evaporation pond solids or intermittently by a sanitary hauler in the case of septic tank clearing. The total non-recyclable waste generated during operation would be approximately 16,656 cubic yards.

Approximately 654 cubic yards of recyclable and non-recyclable hazardous waste could be generated during the 34-month construction period, and approximately 448 cubic yards of recyclable and non-recyclable hazardous waste would be generated over the 30-year operating lifetime. During operation of the plant, hazardous materials would be stored and used in accordance with applicable laws, ordinances, regulations, and standards.

The PSEGS incorporates all but one of the mitigation measures identified in the PSPP PA/FEIS as APMs. The mitigation measures were designed to avoid or reduce waste management impacts on the quality of the human environment. The mitigation measure not included is WASTE-8, which was designed address disposal of Therminol. This measure is no longer applicable because the PSEGS design does not use Therminol. After the inclusion of APMs 1-7 and 9-10, the only factor that could contribute to a significant waste management impact would be a sizeable decrease in remaining capacities at solid waste facilities available to receive waste from the PSEGS.

The capacities and estimated closure dates of many of the nearby solid waste disposal sites have changed since the publication of the PSPP PA/FEIS. These new capacities and closures are listed in Table 3.12-1 of this Draft SEIS. Five Class III municipal landfills are in the vicinity of the project site and are likely to be available to take solid waste from the PSEGS. These facilities include 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).

The total remaining capacity of surrounding Classes II and III solid waste facilities (over 212 million cubic yards) far exceeds the expected total amounts of non-hazardous solid waste generated during both construction and operation of the PSEGS. Disposal of the non-hazardous solid wastes generated by the project would occur without substantially impacting the capacity or remaining life of other Class III landfills in Riverside County.

Hazardous wastes generated during construction, operation, and closure/decommissioning would be sent to the same Class I facilities as were identified in PSPP PA/FEIS Section 4.11.3.2 (p. 4.11-25): Clean Harbors Buttonwillow Landfill in Kern County and Chemical Waste Management Kettleman Hills Landfill in Kings County. The combined remaining capacity of these two waste facilities is 8,934,000 cubic yards. The quantity of hazardous wastes from the PSEGS requiring offsite disposal would be less than 0.1 percent of the combined remaining capacity of the two Class I facilities. There is sufficient remaining capacity at these facilities to handle the PSEGS's hazardous wastes during its operating lifetime.

4.11.2.3 Cumulative Impacts

PSEGS

With the exception of hazardous waste, the PSEGS is expected to generate substantially the same amount and types of waste as were analyzed in the PSPP PA/FEIS. The quantities of hazardous wastes generated would be less under the PSEGS. Cumulative impacts to waste management could occur with the development of additional renewable energy projects and other development projects within range of the waste disposal facilities discussed in the analysis of direct and indirect impacts of the PSEGS, above.

The same method used to analyze cumulative impacts in the PSPP PA/FEIS was used to assess cumulative impacts of the PSEGS. The PSPP PA/FEIS analysis estimates that solar projects would contribute about 100 cubic yards of non-hazardous solid wastes per megawatt during the lifetime of the PSPP, and that solar projects would represent about half of all renewable energy projects to be considered under the cumulative scenario. While the number of renewable energy projects anticipated to be built has decreased by about half, from 125 to 69, solar projects still make up about half of the total renewable energy projects cumulatively analyzed (see Table 4.1-2). Using these updated numbers, the solar projects would generate approximately 1,188,900 cubic yards of waste, and by extrapolation construction and operation of all of the renewable energy projects in the cumulative scenario would generate 2,377,800 cubic yards of waste within the cumulative impacts area. This is just over 1 percent of the combined remaining capacity of the Class III solid waste facilities in Riverside County alone.

Reconfigured Alternative 2 (Option 1 and 2)

As analyzed in PSPP PA/FEIS Section 4.11.3.2 (p. 4.11-25), Reconfigured Alternative 2 (Option 1 and 2) would generate amounts of non-hazardous, universal, and hazardous wastes in amounts comparable to those generated by the PSEGS as analyzed above. For this reason, the impacts of Reconfigured Alternative 2 (Option 1 and 2) in the cumulative scenario are expected to be the same as those described for the PSEGS.

No Action Alternative A

Under No Action Alternative A, the PSEGS would not be developed. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project, which could generate similar amounts and types of wastes as the PSEGS. The cumulative effects of a similarly sized project could be expected to have a similar cumulative effect with respect to landfill capacity. If no project is constructed, there would be no cumulative effect.

4.11.2.4 Summary of Mitigation Measures

The PSEGS incorporates previously recommended mitigation measures as APMs and does not significantly impact waste management directly, indirectly, or cumulatively. Consequently, no mitigation measures are recommended.

4.11.2.5 Residual Impacts after Mitigation Measures were Implemented

No mitigation measures are recommended, so there would be no change in project impacts resulting from mitigation.

4.11.2.6 Unavoidable Adverse Impacts

Unavoidable impacts would be the same as those identified effects, above.

4.11.3 Unexploded Ordnance (UXO)

4.11.3.1 Impact Assessment Methodology

The unexploded Ordnance (UXO) impact assessment methodology used in PSPP PA/FEIS Section 4.11.4 (p. 4.11-29) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and the No Action Alternative can be found in PSPP PA/FEIS Section 4.11.4.2 (p. 4.11-29). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.3.3, below).

4.11.3.2 Direct and Indirect Impacts of the PSEGS

As described in the PSPP PA/FEIS, the project area is located near an area formerly used by military training camps during World War II. Activities associated with these camps included mock battles and the use of live ammunition rounds. Conventional and unconventional land mines and improvised personnel mines, as well as UXO, have been detected in the area. The potential for detonation of such devices presents a direct risk to human health. The potential locations of this ordinance have not been mapped. However, because the PSEGS (including the gen-tie line reroute and the natural gas line extension) would be constructed in the same general area as the PSPP, the exposure risk would be comparable. To ensure work in the project area minimizes potential impacts associated with unexploded ordinance, the Applicant proposes development of an Unexploded Ordinance Identification, Training, and Reporting Plan. Described more fully in Appendix C (see APM WASTE-1), the plan would outline worker training program, ordinance discovery notification personnel, and a work plan for field screening and ordinance removal. Development and implementation of this plan would ensure significant impacts to public health associated with unexploded ordinance are avoided to the extent practicable.

4.11.3.3 Cumulative Impacts

PSEGS

The accidental or unintentional detonation of UXO in the vicinity of the PSEGS constitutes a continuing risk of immediate, acute physical injury from fire or explosion. However, the incremental UXO-related risks of projects in the cumulative scenario could not combine in a way that would be additive, countervailing, or synergistic. Consequently, there would be no significant UXO-related cumulative impacts associated with the PSEGS.

Reconfigured Alternative 2 (Option 1 and 2)

As noted for the PSEGS, the incremental UXO-related risks of projects in the cumulative scenario could not combine in a way that would be additive, countervailing, or synergistic. Consequently, there would be no significant UXO-related cumulative impacts associated with the Reconfigured Alternative 2 (Option 1 and 2).

No Action Alternative A

Under No Action Alternative A, the PSEGS would not be developed. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project, which could pose the same risks with respect to UXO as the PSEGS. However, for the reasons described for the PSEGS and Reconfigured Alternative, above, they could not combine with those of other projects in the area to result in a cumulatively significant impact.

4.11.3.4 Summary of Mitigation Measures

No mitigation measures are recommended.

4.11.3.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.3.6 Unavoidable Adverse Impacts

Unavoidable impacts would be the same as those identified in the discussion of direct and indirect effects, above.

4.11.4 Undocumented Immigrants (UDI)

As stated in PSPP PA/FEIS Section 4.11.5 (p. 4.11-30), there are no known incidents with UDI at or near the project site. Thus, no UDI-related direct or indirect impacts would result from the PSEGS or alternatives, no mitigation measures are recommended, and no cumulative impacts, residual impacts, or unavoidable adverse impacts related to UDI would result.

4.11.5 Transmission Line Safety and Nuisance

4.11.5.1 Impact Assessment Methodology

The transmission line safety and nuisance impact assessment methodology described in PSPP PA/FEIS Section 4.11.6.1 (p. 4.1-31) was used to analyze the proposed PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in Section 4.11.6.2 of the PSPP PA/FEIS (p. 4.11-33). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.5.3, below).

4.11.5.2 Direct and Indirect Impacts of the PSEGS

PSPP PA/FEIS Section 4.11.6 focuses on the transmission line required to serve the generation facility, and addressed the following issues, taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

1. aviation safety;
2. interference with radio-frequency communication;
3. audible noise;
4. fire hazards;
5. hazardous shocks;
6. nuisance shocks; and
7. electrical and magnetic field (EMF) exposure.

The transmission line for the PSEGS would follow the same route as that proposed for the PSPP, with the exception of a slight re-routing of the gen-tie line near the western end of the PSPP route and around the Red Bluff Substation. The PSEGS-proposed reroute would be aligned immediately adjacent to the NextEra Desert Sunlight gen-tie line. The line's components, including the types of poles, numbers of poles, conductor size, and maintenance roadway would be identical to that analyzed in the PSPP PA/FEIS (Palen Solar III, 2013a). The re-route would not be expected to affect any new sensitive receptors. For these reasons, the impacts associated with the proposed gen-tie line reroute would not be appreciably different from those presented in the PSPP PA/FEIS. Because the Applicant has agreed to incorporate the mitigation measures recommended in PSPP PA/FEIS Section 4.11.6.4 (p. 4.11-35) into the PSEGS as APMs (see Appendix C), and because the gen-tie line would be required to comply with all applicable laws, including those governing public safety, the proposed gen-tie line re-route would not have an appreciably different effect on aviation safety, radio frequency communication, noise, fire, nuisance shocks, and EMF exposure that the PSPP. Additional aviation safety and radio frequency communications considerations are addressed in Section 4.11.6, *Traffic and Transportation Safety*, below.

4.11.5.3 Cumulative Impacts

PSEGS

Incremental impacts of construction, operation, maintenance, and decommissioning of the PSEGS could contribute to a cumulative effect on transmission line safety and nuisance when considered in combination with additional transmission lines that would be associated with the cumulative projects identified in see Section 4.1.3. The cumulative impacts area for potential cumulative transmission line safety and nuisance impacts would be limited to the immediate vicinity of the proposed gen-tie line. The relevant timeframe within which incremental impacts could interact to cause or contribute to cumulative impacts would begin when the proposed gen-tie line is erected and would last for as long as the line remains in place. This time period very likely could extend past the point of site closure and decommissioning of the PSEGS.

Existing conditions within the cumulative impacts area reflect a combination of the existing conditions and the effects of past actions and are described in Chapter 3 of this Draft SEIS. As noted above, the direct and indirect effects of the PSEGS would be similar to those described in the PSPP PA/FEIS. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.4. A portion of the PSEGS gen-tie line re-route would be located immediately adjacent to the Desert Sunlight transmission line. The re-route would not affect any new sensitive receptors. The effect of the re-route would be to consolidate and reduce the total combined effects associated with the PSEGS and Desert Sunlight transmission lines with respect to aviation safety, audible noise, fire hazard, and nuisance shocks. As no interference with radio-frequency communication is anticipated for the PSEGS, no cumulative effect is expected.

Regarding EMF exposure, when field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or countervailing, depending on prevailing conditions. Since the proposed action's transmission line would be designed, built, and operated according to applicable SCE field-reducing guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for SCE lines of similar voltage and current-carrying capacity. The PSEGS gen-tie line, in combination with that of the Desert Sunlight Project, would contribute to cumulative EMF conditions.

Reconfigured Alternative 2 (Option 1 and 2)

PSPP PA/FEIS Section 4.11.6.3 (p. 4.11-34) assumes that the siting of transmission lines associated with cumulatively considerable projects in the immediate vicinity of the PSPP would be unlikely. As a result, the PSPP PA/FEIS anticipated no cumulative safety or nuisance impacts resulting from the PSPP or alternatives. The cumulative scenario presented in Section 4.1.4 of this Draft SEIS has been revised to reflect changes to past, present, and reasonably foreseeable projects in the area. While the PSEGS proposes to locate a portion of the gen-tie line near the Desert Sunlight Project, Reconfigured Alternative 2 does not, and so the cumulative scenario continues to assume that the siting of another project's transmission line next to the gen-tie line for Reconfigured Alternative 2 would be unlikely. Therefore, no cumulatively considerable safety or nuisance impacts are anticipated for Reconfigured Alternative 2 (Option 1 and 2). As discussed on page 4.11-35 of the PSPP PA/FEIS, Reconfigured Alternative 2 could, however, contribute to cumulative EMF conditions.

No Action Alternative A

Under this alternative, the BLM would deny the PSEGS ROW application and no transmission line would be constructed pursuant to that application. However, because the ROW application area lies within the Riverside East SEZ, it is reasonable to expect that some sort of solar energy project may be proposed for the site in the future. While it would be speculative to assume the types of impacts that may result from a yet to be identified proposal, for the reasons described for Reconfigured Alternative 2, it is unlikely that such a proposal's transmission line would have cumulatively considerable safety and nuisance impacts due to the siting of another project's line adjacent to that proposed by the future project. If a future project at this site does propose a transmission line route similar to that of the PSEGS, then similar cumulative effects would be expected. Under both scenarios, some cumulative contribution to EMF conditions would result. If no transmission line were developed for a future project on this site, no cumulative effect would result.

4.11.5.4 Summary of Mitigation Measures

No mitigation measures are recommended.

4.11.5.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.5.6 Unavoidable Adverse Impacts

No unavoidable adverse impacts are anticipated with respect to transmission line safety and nuisance.

4.11.6 Traffic and Transportation Safety

4.11.6.1 Impact Assessment Methodology

The traffic and transportation safety impact assessment methodology described in PSPP PA/FEIS Section 4.11.7.1 (p. 4.11-36) was used to analyze the proposed PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and the No Action Alternative can be found in PSPP PA/FEIS Section 4.11.7.2 (p. 4.11-38). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.6.3, below).

4.11.6.2 Direct and Indirect Impacts of the PSEGS

Aviation Safety

Physical Penetrations of Navigable Airspace

The PSEGS's overhead 230 kV single circuit transmission line would likely range from 90 feet to a maximum of 145 feet in height and would span approximately 5 miles from the proposed switchyard to the Red Bluff Substation. The PSEGS would not modify the characteristics of the gen-tie line and its proposed shift of the gen-tie line approximately 1,125 feet to the west of the westerly portion of the PSPP gen-tie line would not move it appreciably closer to any sensitive receptor. The closest airports are the Desert Center Airport (approximately 2 miles from the gen-tie line) and the Blythe Airport (approximately 30 miles east). There are no public use airport runways within 20,000 feet of the gen-tie line and the maximum height of the proposed gen-tie line support structures (145 feet) is below the height of the FAA's mandatory airspace protection notification surface (i.e., 200 feet above ground level) as defined in 14 CFR Part 77. It is unlikely that the proposed gen-tie line would have a negative effect on navigable airspace.

The two PSEGS power tower structures would be constructed of concrete and would rise to a height of 750 feet above ground level, which is well above the height of the FAA's 14 CFR Part 77 notification surface. The Applicant has consulted with the FAA and will be filing FAA Form 7460-1, *Notice of Proposed Construction or Alteration* with the FAA's Office of Obstruction Evaluation/Airport Airspace Analysis (OE/AAA). The Applicant is seeking a Determination of No Hazard from OE/AAA.

The Applicant also has committed to installing obstruction markings and lighting on the two power tower structures consistent with guidance provided in FAA Advisory Circular 70/7460-1K (FAA, 2007) and Department of Defense Guidelines. See Appendix C, APM TRANS-8 for more details.

Hazardous Wildlife Attractants

The Applicant has proposed two, 2-acre evaporation ponds (i.e., artificial bodies of water) to be located in the southwest corner of the PSEGS site near the administrative/ warehouse building. The PSEGS would result in 4 acres of evaporation ponds within the project site. Evaporation ponds could attract birds, especially where natural water sources are scarce. Flying birds can become a hazard to aircraft, particularly during take-offs and landings, the most critical times of flight. During take-offs and landings, the presence of birds can obscure pilots' vision or result in other dangers or distractions that could cause pilots to lose control of their aircraft. Based on the distance between the proposed evaporation ponds and the nearest airport facilities it is unlikely that construction of four acres of evaporation ponds on the site would increase the number of bird strikes at Desert Center Airport or Blythe Airport, or otherwise increase hazards to pilots of aircraft in the region. Nevertheless, the Applicant has committed to implementing measures to reduce the potential for the ponds to act as an attractant to birds and other wildlife. See Appendix C, APM BIO-26 for more details.

Interference with Radio-Frequency Communication

The overhead 230 kV gen-tie line would be designed, built, and maintained in keeping with standard SCE practices that minimize surface irregularities, surface discontinuities, and related corona noise. Such corona effects would further be minimized by the specific low-corona designs proposed by the Applicant. No radar transmission or receiving facilities or other aviation navigational aids (NAVAIDS) are located at the Desert Center Airport or in the immediate vicinity. Since the transmission line would traverse an uninhabited open space and would not interfere with modern digital airport-related communications, no interference with radio-frequency communication would occur.

Thermal Plumes

The Desert Center Airport is located approximately 5 miles northwest of the proposed solar field; it is used an average of approximately 12 times a month. Construction, operation and decommissioning of the PSEGS could have a limited affect on airport operation. The PSEGS includes two dry-cooling systems, including two 120-foot air-cooled condensers, one for each power tower structure. Under certain ambient air conditions, the two air-cooled condensers could create an upward flow of air and heat at a rate exceeding 14.1 feet per second (fps), which is equivalent to 4.3 meters per second (m/s), at heights as much as approximately 1,670 feet AGL.[1] The temperature of the air exiting the top of the air-cooled condensers would be ambient temperature plus 5 to 20 degrees Fahrenheit (Galati, 2013). For the purposes of this analysis, it has been determined that a plume of 14.1 fps velocity has the potential to affect aircraft operations when flying at low levels. To reduce the potential aviation hazards associated with these plumes, the Project sponsor would implement APM PUBLIC HEALTH-2. Described more fully in Appendix C, this measure would involve submission of letters to the FAA and Department of Defense and area flight stations requesting formal notification to pilots of the

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[1] These calculations were performed by an aviation consultancy to assess the potential impacts of the proposed Blythe Solar Power Project on aviation safety and general operations at Blythe Airport. Given the similarities in the proposed air cooling system infrastructure (air cooled condensers) associated with the Blythe and PSEGS projects, it is assumed that the PSEGS would generate industrial/thermal plumes of similar types and sizes.

presence of the power plant and recommending overflight of the project site below 1,500 feet above ground level be avoided.

Glare and Glint

Solar facilities generally use one of three technologies designed to concentrate the sun's rays to generate heat, thereby creating electricity. Concentrated solar power facilities with power towers are comprised of individual heliostats (mirrors) arrange in a circular array that track with the sun. Each heliostat reflects sunlight onto a central receiver located near the top of the power tower. This technology has the potential for creating glint and glare. *Glint* is defined as a momentary flash of light; *glare*, as a more continuous source of excessive brightness relative to the ambient lighting. Hazards from glint and glare from concentrating solar plants can range from permanent eye injury or retinal burn to temporary disability or distractions (flash blindness). These hazards could affect pilots using or flying past airports in the region and motorists traveling along I-10 and Highway 177, among other visitors to the area.

To address potential glare/glint impacts to pilots, motorists, hikers, and others, the Applicant has proposed two measures: TRANS 6 and TRANS 7. These two measures, set forth in Appendix C, are expected to reduce the potential for the PSEGS to negatively impact aircraft pilots, motorists, and other user groups. It also is noted that windows of airplane cockpits typically are coated with anti-reflective glazing and operators generally wear polarized eyewear to reduce the effects of glint and glare (FAA, 2010).

Roadway Safety

The direct and indirect traffic and transportation safety-related impacts of the PSEGS on the transportation system are examined in this section. Several pieces of equipment that exceed roadway load or size limits would need to be transported to the project site via I-10 during construction, potentially resulting in a roadway hazard. This equipment includes the steam turbine generators and main transformers. The equipment would be transported using multi-axle trucks. To transport the equipment, the Applicant must obtain special ministerial permits from Caltrans to move oversized or overweight materials. In addition, the Applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary.

Transportation of hazardous materials could result in leaks or spills and cause a hazard to public health and safety. Trucks would travel on I-10, exit at Corn Springs Road and continue to the site via a new access road. The transport vehicles would be required to follow federal and state regulations governing proper containment vessels and vehicles, including appropriate identification of the nature of the contents.

Finally, increased congestion on I-10, mainly during the construction period could increase the risk of vehicle collisions in the vicinity of the site. Discussed more fully in Section 4.16, the PSEGS would require approximately 998 daily construction workers, which equates to about 1,996 one-way vehicle trips per day (assuming each worker would be commuting via private vehicle). Peak construction would be expected to occur during Month 22 (Year 2015) of the 34-month construction period. During this peak month, the workforce is estimated to be about 2,311 workers a day. Assuming a worst-case scenario, where all workers during the peak construction period commute in their own vehicles, peak construction activities would yield about 4,622 one-way vehicle trips per day (Palen Solar Holdings, 2012).

The Applicant has committed to implementing the mitigation measures identified in the PSPP PA/FEIS as APMs to ensure that significant roadway safety impacts are avoided. Set forth in Appendix C, these APMs include compliance with all applicable regulations governing transportation safety, obtaining and complying with permits required for transport of hazardous materials, repair of roads damaged during construction activities, and development and implementation of a traffic control plan that, among other things, encourages carpooling and minimize truck deliveries during peak hours (see APMs TRANS-1 through TRANS-4).

Emergency Services Vehicle Access

The Applicant has proposed construction of a secondary access road and gate within the natural gas pipeline extension ROW, south of the PSEGS site. Pursuant to APM WORKER SAFETY-6 (see Appendix C), the road would be at least 20-feet wide, consist of an all-weather gravel surface, and connect to the I-10 ROW. The secondary access gate would be at least one-quarter mile from the main gate and be accessible to the RCFD, Riverside County Sheriff's Department, and California Highway Patrol. Preliminary plans for the access road and gate would be submitted to the RCFD for review and approval at least 60 days prior to the start of site mobilization, and final plans at least 30 days prior to the start of construction.

Water and Rail Obstructions

The PSEGS is not adjacent to a navigable body of water and therefore would not alter water-related transportation. Also, the PSEGS would not alter rail transportation because no rail tracks exist on or near the proposed site.

4.11.6.3 Cumulative Impacts

PSEGS

Incremental traffic and transportation-related safety impacts[2] resulting from construction, operation, maintenance and decommissioning of the PSEGS could result in a cumulative effect in combination with past, present, and/or reasonably foreseeable future actions. The cumulative impacts area for transportation safety consists of the I-10 corridor and areas in the vicinity of the Desert Center Airport and Blythe Airport. This geographic scope of cumulative impacts analysis is limited to the area where PSEGS-related transportation impacts could cause hazards. Potential cumulative effects on transportation safety could begin (for aviation) with the installation-related testing of the proposed air-cooled condensers, erection of the solar power towers, the installation of facilities that could cause glint or glare, or the occurrence of water within the evaporation

[2] Traffic impacts, as contrasted with safety impacts, are analyzed in Section 4.16 of the Draft SEIS.

ponds, and (for roadways) with the onset of over-sized construction vehicles. These beginning points may not coincide precisely with the initiation of the construction period. The potential for cumulative impacts would persist for as long as these features are present, and could extend to the conclusion of the closure and decommissioning phase of the project.

Existing conditions within the cumulative impacts area reflect a combination of the existing condition and the effects of past actions and are described in Chapter 3. Direct and indirect effects of the PSEGS are analyzed above. Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.4. Within the cumulative impacts area for transportation safety, there are 15 solar projects (including the Genesis Solar Energy Project and the Blythe Solar Power Project) proposed along the I-10 corridor predominantly between Desert Center and Blythe. Based on the currently available data for these various projects (information obtained from Plans of Development and other project documents), and assuming all projects move forward, several these projects would be under construction during same general time frame as the project (2013 to 2016). Construction traffic could affect area roadways at the same time, thereby increasing the potential safety risks associated with accidents, hazardous materials spills, and potential incompatibility with other types of vehicles. Projects other than renewable projects also could proceed during this timeframe and, thereby, contribute construction traffic-related risks elsewhere along the I-10 corridor. The increased risk of safety hazards associated with construction traffic could be substantial.

Aviation-related risks could increase as a result of the construction and operation of water features that could attract birds as part of other developments, such as the evaporation ponds associated with the Blythe Solar Power Project, thermal plumes caused by condensers and other equipment, and new sources of glint or glare, such as the solar troughs associated with utility scale solar thermal projects (e.g., the Blythe Solar Power Project and Genesis Solar Energy Project) and, to a lesser extent (FAA, 2010), solar panels associated with photovoltaic projects (e.g., Desert Sunlight). Together, these contributions to an aviation-related hazard could be substantial. However, given the low level of use at the Desert Center Airport and the distance between the project site and the Blythe Airport, the project's contribution to aviation safety hazards is expected to be insubstantial.

Reconfigured Alternative 2 (Option 1 and 2)

The cumulatively considerable transportation safety impacts associated with Reconfigured Alternative 2 (Option 1 and 2) would be similar to those of the PSEGS because the alternative project would be similar in size and location. Potential impacts associated with construction traffic and aviation safety would be fewer, as the alternatives would employ a smaller workforce and not include solar power towers. At the same time, the risk of hazardous materials spills would be greater under Reconfigured Alternative 2 because the PSEGS would not use the heat transfer fluid Therminol.

No Action Alternative A

Under this alternative, the BLM would deny the PSEGS ROW application. However, because the ROW application area lies within the Riverside East SEZ, it is reasonable to expect that some sort of solar energy project may be proposed for the site in the future. While it would be speculative to assume the types of impacts that may result from a yet to be identified proposal; any utility-scale solar project proposed for the ROW application area, within the project timeframe of the projects identified in the cumulative scenario, would be expected to contribute cumulatively to those types of impacts identified above for the PSEGS or Reconfigured Alternative 2, with slight variations based upon proposed solar technology.

4.11.6.4 Summary of Mitigation Measures

No mitigation measures are recommended

4.11.6.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.6.6 Unavoidable Adverse Impacts

Unavoidable impacts would be the same as those identified in the discussion of direct and indirect effects, above.

4.11.7 Worker Safety and Fire Protection

4.11.7.1 Impact Assessment Methodology

The worker safety and fire protection impact assessment methodology described in PSPP PA/FEIS Section 4.11.8.1 (p. 4.11-40) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.11.8.2 (p. 4.11-45). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.7.3, below).

4.11.7.2 Direct and Indirect Impacts of the PSEGS

The PSPP PA/FEIS describes workplace safety and fire protection considerations associated with the PSPP (see, e.g., p. 4.11-41). As both proposals involve utility-scale solar projects, many of these considerations are similar for both projects. Described below, major differences in the two proposals concerning workplace safety and fire protection stem from the PSEGS's elimination of Therminol and liquefied petroleum gas from its plan of development, and the PSEGS's addition of a natural gas pipeline extension.

Worker Safety

As described in the PSPP PA/FEIS, industrial environments, such as that proposed for the PSEGS, are potentially dangerous during construction, operation and maintenance, and closure. Workers at the site would be exposed to excessive heat, loud noises, moving equipment, trenches, and confined space entry and egress. The workers could experience falls, trips, burnps, lacerations, and numerous other injuries. They could be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, or electrical sparks and electrocution. Well-defined policies and procedures, training, and hazard recognition and control can minimize the potential or such risks to project workers. The PSEGS's compliance with applicable laws, ordinances, regulations, and standards would ensure adequate protection of worker health and safety.

Construction Safety and Health Program

Construction Safety Orders are published at Title 8 CCR Section 1502, et seq. These requirements have been promulgated by Cal/OSHA and would apply to the construction phase of the PSEGS, and would require the development of a Construction Safety and Health Program. Implementation of additional programs under General Industry Safety Orders (8 CCR §§3200-6184), Electrical Safety Orders (8 CCR §§2299-2974), and Unfired Pressure Vessel Safety Orders (8 CCR §§450-544) would be required. These programs are described more fully in PSPP PA/FEIS (see, e.g., p. 4.11-42). The Applicant has proposed to implement, as part of the PSEGS, all of the mitigation measures identified in PSPP PA/FEIS Section 4.11.8.4 (pp. 4.11-46, 4.11-47). Set forth in Appendix C, these APMs include commitments to prepare a project construction safety and health program (APM WORKER SAFETY 1). This program would be developed to comply with and carry out the requirements of the safety orders identified above.

Operations and Maintenance Safety and Health Program

Operations safety orders include General Industry Safety Orders (8 CCR §§3200-6184), Electrical Safety Orders (8 CCR §§2299-2974), and Unfired Pressure Vessel Safety Orders (8 CCR §§450-544). As with the above for construction, the Applicant would develop an operations and maintenance safety and health program. The program would address the issues of injury and illness (8 CCR §3203), fire protection and prevention (8 CCR §3221), protective equipment (8 CCR §§3401-3411), and emergency action (8 CCR §3220). See APM WORKER SAFETY-2 in Appendix C. Written safety programs for the PSEGS would ensure compliance with the above-mentioned requirements and would assure that the impacts that otherwise could occur would be avoided or sufficiently minimized.

Fire Protection

Development of the PSEGS would be subject to requirements of the Riverside County Fire Department (RCFD), including access requirements. Further, implementation of the PSEGS could require response or assistance from the RCFD's hazardous materials response team; advanced life support/paramedic services; disaster preparedness and response during construction, operation and maintenance; or closure and decommissioning. The closest RCFD station that would respond to an incident at the site is the Lake Tamarisk Station, located off of I-10 approximately 10 miles west. The Lake Tamarisk Station (#49) is located at 43880 Lake Tamarisk in Desert Center. The next closest RCFD station that would respond is the Terra Lago Station (#87), located at 42900 Golf Center Parkway in Indio, approximately 45 miles from the project site. The nearest hazardous materials response team is located at the North Bermuda Dunes Station (#81) located at 37-955 Washington Street in Palm Desert, approximately 65 miles west. It is expected that units from the Lake Tamarisk Station and Terra Lago Stations would arrive at the site within 14 and 45 minutes after dispatch, respectively, when responding to incidences of fire, and within approximately 1 hour when responding to hazardous material spills (Dorian Cooley, 2013).

The types of hazards that could trigger the need for an RCFD response are discussed above. The Applicant has commissioned a Fire Needs Assessment that will be based on the NFPA 551 Guide for the Evaluation of Fire Risk Assessments. There are several models that can be used. The Applicant will use the semi-quantitative likelihood method, which treats the likelihood and determines the frequency of occurrence of different types of incidents with different types of protections. The Applicant will use actuarial/ loss statistics analyses for fire, rescuer, hazardous material incidents, and the study will consider training and inspection times required for the facility. A Fire Safety Concepts Tree will be developed to evaluate effective fire protection strategies and solutions using a branching diagram to show relationships of fire prevention and fire damage control strategies. It will provide an overall structure with which to analyze the potential impact of fire safety strategies such as regulatory, construction, combustibility of contents, protection devices, and occupant procedures. It is anticipated that this plan will be completed in July 2013.

The needs assessment will detail the measure necessary to minimize and offset impacts associated with the proposed project. These measures will be included in APM WORKER SAFETY-7. Upon receipt of the needs assessment, the BLM will review and, as appropriate, incorporate the proposed measures into the analysis and integrate its findings and any additional mitigation measures into the Final EIS for the PSEGS.

Further, compliance with applicable requirements would avoid or reduce the potential for workplace accidents that otherwise could require emergency responders. For example, California regulations applicable to the PSEGS would require the Applicant to prepare an Operations Fire Prevention Plan (8 CCR §3221) to determine general program requirements (scope, purpose, and applicability) and potential fire hazards; to develop good housekeeping practices, proper handling and materials storage, potential ignition sources and control measures for these sources, and the persons who would be responsible for equipment and system maintenance; to locate portable and fixed fire-fighting equipment in suitable areas; to establish and determine training and instruction requirements; and to define recordkeeping requirements. Additionally, the 2007 California Fire Code, 2010 California Building Code and Riverside County Ordinance No. 787 would safeguard life and property from fire and explosion hazards. The Applicant also would have to prepare a complete chemical classification inventory for submission to the Riverside County Planning and Engineering Bureau.

Applicable regulations also would require preparation of a Personal Protective Equipment (PPE) Program and require first aid supplies be on-site whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 CCR §§3380-3400). All safety equipment would have to meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards, and would carry markings, numbers, or certificates of approval. Respirators would meet NIOSH and Cal-OSHA standards. Each employee would be provided with the following information pertaining to the protective clothing and equipment: proper use, maintenance, and storage; when to use the protective clothing and equipment; benefits and limitations; and when and how to replace the protective clothing and equipment.

Compliance with the PPE Program would ensure that the Applicant complies with applicable PPE requirements and provides employees with the information and training necessary to protect them from potential workplace hazards. Further, applicable regulations would require an Emergency Action Plan (8 CCR §3220). It is expected that the Emergency Action Plan would identify roles and responsibilities; determine emergency incident response training; develop emergency response protocols; specify evacuation protocols; define post emergency response protocols; and determine notification and incident reporting. Additional requirements called “safe work practices” would apply to the PSEGS. Both the Construction and the Operations Safety Programs would address safe work practices under a variety of programs. The components of these programs would include, but not be limited to, the programs discussed above. Employee safety training would include safe work practices. Implementation of these measures and programs would serve as the primary mechanism for fire prevention and protection. Services provided by the RCFD would be secondary and for emergency purposes.

Use of Explosives

PSEGS construction may require the use of explosives during the construction of footings to remove large rocks or boulders. In addition, explosives may be used to demolish the towers ground during site closure and reclamation. Prior to blasting, a detailed blasting plan would be submitted by the construction contractor for each blast site that identifies the proposed blasting methods, existing structures and facilities, and scaled distance estimates of projection distance and the speed of particles that may be mobilized by blasting activities. Conventional or plastic explosives would be used, if necessary subject to safeguards (e.g., blasting mats) for adjacent areas (Palen Solar III, 2013a). As needed, the Blasting Plan would be part of either or both of the Construction Safety and Health Program (APM WORKER SAFETY-1, *Project Construction Safety and Health Program)* and the Decommissioning Plan (APM BIO-22, *Decommissioning and Reclamation Plan*).

4.11.7.3 Cumulative Impacts

PSEGS

Incremental worker safety-related impacts of the project would result in a risk level that would remain below thresholds of concern and, therefore, would not cause or contribute to any cumulative effect on worker safety. Regardless of the level of solar development or acreage developed under any of the action alternatives, the utility-scale solar energy development that would result would be subject to the same worker safety requirements as the PSEGS and, therefore, also would not result in a risk level that could cause or contribute to any cumulative effect on such safety. No Project Alternative A is not expected to require workers, and so would not be expected to affect worker safety, unless and until a future project is proposed on the site.

For purposes of this analysis, the cumulative impacts area for fire safety-related resources consists of the RCFD's service area. Potential cumulative fire safety-related effects could occur over the course of 40 or more years from construction, operation, and maintenance, through closure and decommissioning. For the fire safety-related issues of emergency medical and hazardous materials spill response, the incremental impacts of the PSEGS could result in a cumulative effect when combined with the impacts of other projects in the cumulative scenario. More specifically, a cumulative Worker Safety/Fire Protection impact would occur in the event of a simultaneous need for a fire department to respond to multiple locations such that its resources and those of the mutual aid fire departments (which routinely respond in every-day situations to emergencies at residences, commercial buildings, and heavy industry) would be over-whelmed and could not effectively respond.

The RCFD has indicated that a solar project on the proposed site could result in a cumulative adverse impact to its effectiveness for timely responses. The Applicant presently is working on a fire needs assessment to determine the impact of the PSEGS on response capacity and the measures that can be taken to ensure RCFD's ability to respond to fire safety related issues of emergency medical and hazardous materials spill response is not diminished. The results of the needs assessment will form the basis of an agreement between the Applicant and the RCFD that will outline such measures. Once finalized, the results of that agreement will be factored into this analysis, along with any additional mitigation measures necessary, and integrated into the Final EIS.

Reconfigured Alternative 2 (Option 1 and 2)

Fire safety-related impacts resulting from the Reconfigured Alternative 2 (Option 1 and 2), when combined with those of the cumulative scenario, would be similar to those described for the PSEGS. Discussed in Section 4.1, there are presently at least 15 pending applications for solar projects on BLM lands along the I-10 corridor in the project vicinity. Construction of multiple utility-scale solar projects in this area of Riverside County could continue to strain the RCFD's ability to maintain adequate response times.

No Action Alternative A

Under this alternative, the BLM would deny the PSEGS ROW application. However, because the ROW application area lies within the Riverside East SEZ, it is reasonable to expect that some sort of solar energy project may be proposed for the site in the future. If such a facility is constructed, for the reasons discussed for the PSEGS and Reconfigured Alternative 2, the combined effect of such a project with other developments in the region, including especially utility-scale solar projects, would be expected to have a cumulative effect on response times. If the ROW application area remains undeveloped, there would be no cumulatively considerable fire safety-related impact.

4.11.7.4 Summary of Mitigation Measures

No mitigation measures are recommended.

4.11.7.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.7.6 Unavoidable Adverse Impacts

Unavoidable impacts would be the same as those identified in the discussion of direct and indirect effects, above.

4.11.8 Geologic Hazards

4.11.8.1 Impact Assessment Methodology

The geologic hazards impact assessment methodology described in PSPP PA/FEIS Section 4.11.9.1 (p. 4.11-48) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.11.9.2 (p. 4.11-50). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.11.8.3, below).

4.11.8.2 Direct and Indirect Impacts of the PSEGS

The PSEGS is proposed for the same general location as was described and analyzed in the PSPP PA/FEIS. As such, the geologic hazards underlying the PSEGS ROW application area, including those areas proposed for the gen-tie line re-route and new natural gas pipeline, do not cross into areas where geologic hazards differ from those evaluated in PSPP PA/FEIS Section 4.11.9 (p. 4.11-47 et seq.). Accordingly, risks associated with subsidence and volcanic activity would remain low. The potential for structural damage and spills of hazardous materials resulting from seismic groundshaking and liquefaction would remain low to moderate, as would those associated with hydrocompaction and corrosive soils. The erosive forces of wind and rain at the proposed site would continue to be high. PSPP PA/FEIS Section 4.11.9.4 (P. 4.11-52) identifies a number of mitigation measures designed to minimize potential effects of these geologic forces. The Applicant has elected to incorporate all such measures into the PSEGS as APMs. Set forth in Appendix C, these APMs include the preparation of several reports, plans, and contingencies for encountering unforeseen geologic conditions. Through implementation of these APMs, the geologic hazards associated with the PSEGS would be controlled effectively.

4.11.8.3 Cumulative Impacts

PSEGS

Impacts resulting from construction, operation, maintenance and decommissioning of the PSEGS could result in a cumulative effect in connection with geologic hazards with other past, present, or reasonably foreseeable future actions. Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.4. This geographic scope of cumulative impacts analysis was established because potential cumulative effects, as they pertain to geologic hazards, generally are limited to regional subsidence due to groundwater withdrawal in the Chuckwalla Valley groundwater basin. The geographic scope of the cumulative impacts analysis for such resources is limited generally to the proposed site (including the gen-tie line reroute and new natural gas line) overlaying the Chuckwalla Valley groundwater basin. Several projects identified in the cumulative scenario are located within the Chuckwalla Valley groundwater basin. Such projects could include groundwater pumping of similar magnitude to the PSEGS; however, the combined effect of these projects still would result in much less than the historic rate of 48,000 ac-ft/yr. Impacts associated with strong ground shaking and earthquake-induced settlement, hydrocompaction, and corrosive soils are not cumulative in nature and would not add to potential cumulative impacts to the facility.

Potential cumulative effects on geologic hazards could occur at any time during the lifespan of the PSEGS, from construction to decommissioning. Existing conditions within the cumulative impacts assessment area of geologic resources and hazards reflect a combination of the natural condition and the effects of past actions and are described in Chapter 3. Historic groundwater withdrawals have not resulted in any documented subsidence in the vicinity of the site. The PSEGS would result in increased annual groundwater pumping, from the current 2,000 aft/yr to approximately 2,200 aft/yr (a 10 percent increase). Since this level of pumping did not result in any documented regional subsidence, significant impacts to regional subsidence is not expected. Therefore, there would be no significant cumulative contribution to regional subsidence from foreseeable renewable projects, including the project, in the Chuckwalla Valley groundwater basin. Additional information on groundwater withdrawal is contained in Section 4.19. Finally, decommissioning of the PSEGS is not expected to require any significant amount of groundwater pumping; impacts to regional subsidence are not expected.

Reconfigured Alternative 2 (Option 1 and 2)

As the general location, operational water demands, and nature of Reconfigured Alternative 2 (Option 1 and 2) are substantially similar to those of the PSEGS, Reconfigured Alternative 2's potential cumulative effects on geologic hazards would be similar to those of the PSEGS. As discussed for the PSEGS, Reconfigured Alternative 2 (Options 1 and 2), cumulatively effects would largely be associated with subsidence due to groundwater withdrawal. As the water demands of the Reconfigured Alternative 2 would be similar to those of the PSEGS, and withdraw water at rates below historic levels; construction, operation, and decommissioning of Reconfigured Alternative 2 would not be expected to contribute significant impacts to regional subsidence.

No Action Alternative A

Under this alternative, the BLM would deny the PSEGS ROW application. However, because the ROW application area lies within the Riverside East SEZ, it is reasonable to expect that some sort of solar energy project may be proposed for the site in the future. If such a project is constructed, it could have water demands similar to those of the PSEGS.

4.11.8.4 Summary of Mitigation Measures

No mitigation measures are recommended.

4.11.8.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.8.6 Unavoidable Adverse Impacts

No unavoidable adverse effects are anticipated.

4.11.9 Site Security

4.11.9.1 Impact Assessment Methodology

The site security impact assessment methodology described in PSPP PA/FEIS Section 4.11.10 (p. 4.11-53) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.11.10.2 (p. 4.11-54). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (See Section 4.11.9.3, below).

4.11.9.2 Direct and Indirect Impacts of the PSEGS

The PSPP proposed the use of liquefied petroleum gas (LPG), which is listed by the Department of Homeland Security (DHS) as a Chemical of Interest with a threshold level of 60,000 pounds. As the PSPP proposed to store a maximum of 152,000 pounds of propane/LPG onsite, the Chemical Facility Anti-Terrorism Standards would have applied and the Applicant would have been required to submit a “Top Screen” assessment to the DHS. The PSEGS proposes no chemicals listed by DHS as a Chemical of Interest. Nonetheless, BLM believes that action is appropriate to ensure that this facility (or a related shipment of a hazardous material) is not the target of unauthorized access.

The level of security needed for a particular power plant depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event. As discussed in the PSPP PA/FEIS, the PSPP facility was identified as “low vulnerability” for threat of adversarial attack despite the use of a DHS Chemical of Interest. Because the PSEGS is substantially similar to the PSPP but would not use any Chemicals of Interest, it also is assumed to be a “low vulnerability” project. This designation would not be affected by the gen-tie line reroute or natural gas pipeline extension.

Security measures proposed for the PSEGS include installation of a chain link security fence around the site perimeter, switchyard and other areas requiring controlled access prior to beginning construction. The site perimeter fence would be designed and installed in accordance with requirements of DHS. Access to the facility would be provided through controlled access gates. Access through the main gate would require an electronic swipe card. All visitors would be logged in and out of the facility during normal business hours. Visitors and non-employees would be allowed entry only with approval from a staff member at the facility. Visitors would be issued visitor passes that are worn during their visit and returned at the main office when leaving. The facility would be staffed 24 hours per day, seven days per week. Even when the solar power plant is not operating, personnel would be present as necessary for maintenance, to prepare the plant for startup, and/or for site security (Palen Solar Holdings, 2012).

In addition to these measures, the Applicant has agreed to implement all of the mitigation measures that were recommended in the PSPP PA/FEIS as APMs (see Appendix C, APMs HAZ-6 and HAZ-7). These APMs include, among others, the preparation of a Construction Site Security Plan and Operation Security Plan. Implementation of these APMs would ensure that site security is maintained and the risk of threat is minimized.

4.11.9.3 Cumulative Impacts

PSEGS

The development and operation of the PSEGS would contribute an incremental low vulnerability site security threat to a cumulative effect relative to site security with other past, present, or reasonably foreseeable future energy generation actions. The geographic scope of the cumulative impacts analysis for such threat would be the California Desert area. Potential cumulative site security effects could occur at any time during the lifespan of the PSEGS, from construction to decommissioning, and would not persist past closure and decommissioning.

Other past, present, and reasonably foreseeable future energy generation projects are identified in Section 4.1.4. As of May 2013, there were approximately 106 renewable projects proposed in California in various stages of environmental review or under construction. Solar, wind, and geothermal development applications have requested use of BLM land, including approximately

1 million acres of the California desert. State and private lands have also been targeted for renewable energy projects. In addition, approximately 69 applications for solar and wind projects on BLM land are currently being considered. BLM's energy projects in the California Desert District are identified in Table 4.1-2. Renewable energy projects on state and private lands are identified in Table 4.1-3.

The BLM has not received threat determinations for specific facilities, such as the PSEGS; however, given the utility-scale nature of the PSEGS and its similarities with other proposed utility scale solar proposals (such as Blythe, Genesis, and Desert Sunlight), the BLM assumes that threat levels among the facilities would be comparable. Smaller projects could have an even lower vulnerability. Although the threat imposed and likelihood of an adversarial attack may be comparable regardless of facility size, the likelihood of a smaller (lower energy output) facility's success in causing a catastrophic event and the severity of consequences of that event would seem reduced.

The presence of other DHS "Critical Infrastructure and Key Resources" sectors in the cumulative impacts analysis area, if present, also could contribute incrementally to the overall threat level. Such other sectors include National Monuments and Icons, Agriculture and Food, Banking and Finance, Chemical, Commercial Facilities, Critical Manufacturing, Dams, Defense Industrial Base, Emergency Services, Government Facilities, Healthcare and Public Health, Information Technology, Nuclear Reactors, Materials and Waste, Postal and Shipping, Water, Communications, and Transportation Systems (including aviation and highway). Thus, the Wileys Well Communication Tower, Blythe Municipal Airport, and I-10 each could contribute incrementally to the overall security threat.

Reconfigured Alternative 2 (Option 1 and 2)

Each of the utility-scale solar projects in the region that are or would be similar in size to the PSEGS would present a similar risk profile. The absence of the gen-tie line reroute or natural gas line addition would not be expected to appreciably reduce Reconfigured Alternative 2's vulnerability level relative to the PSEGS, and so the site security threat is expected to be similar to that of the PSEGS.

No Action Alternative A

Under this alternative, the BLM would deny the PSEGS ROW application. However, because the ROW application area lies within the Riverside East SEZ, it is reasonable to expect that some sort of solar energy project may be proposed for the site in the future. The cumulative contribution of such a project to security threats in the California Desert would vary based upon the factors discussed above, including the size and scale of the project, the types and quantities of chemicals stored on site, and level of security. If no project were to be constructed, there would be no cumulative contribution to site security impacts in the region.

4.11.9.4 Summary of Mitigation Measures

No mitigation measures are proposed.

4.11.9.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.11.9.6 Unavoidable Adverse Impacts

No unavoidable impacts would be anticipated.

4.11.10 Military Overflights

To determine whether there is any possible conflict with military overflights and military aviation training and operations, an analysis is required from the Department of Defense Regional Complex Sustainability Office (DOD R-2508), Region IX, based in San Diego. The Applicant has received a letter of non-objection from the Department of Defense for construction and operation of the towers at the PSEGS site. The letter, which is provided in Appendix E and documents an informal review by the DOD Siting Clearinghouse, indicates mitigable impacts to training activities conducted on four military training routes including VR-296, IR-218, VR-1265, and VR-1268. A formal review of possible impacts to military flight operations would be required from the San Diego Sustainability Office prior to construction.

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4.12 Impacts on Recreation

4.12.1 Impact Assessment Methodology

The recreation impact assessment methodology described in PSPP PA/FEIS Section 4.12.1 (p. 4.12-1) was used to analyze the potential effects of the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.12.2 (pp. 4.12-4, 4.12-5). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario in Section 4.12.3, below.

Note: This Section 4.12 focuses on non-transportation-related recreational opportunities. For impacts to OHV users, see Section 4.16, *Impacts on Transportation and Public Access - Off-Highway Vehicle Resources*.

4.12.2 Direct and Indirect Impacts of the PSEGS

On-Site Recreational Users

The PSEGS would convert approximately 3,896 acres of public land within the ROW boundary to a solar energy use; this would be approximately 130 fewer acres of conversion compared to the PSPP analyzed in the PSPP PA/FEIS. The construction period for the PSEGS would be approximately 5 months shorter than the PSPP, but would occur over longer work days. During construction, operation, and decommissioning, the direct impact to dispersed recreational opportunities on the site would be similar to that of the PSPP in that they would not be available to potential users. The effects of displacing recreational uses to other desert lands also would be similar, and likely would be minimal.

Off-Site Recreational Users

The PSEGS could cause indirect effects to off-site recreational users that are similar to those described in PSPP PA/FEIS Section 4.12.2 (p. 4.12-1). For a discussion of potential impacts to OHV route access to dispersed areas, including several wilderness areas, see Section 4.16, I*mpacts on Transportation and Public Access - Off Highway Vehicle Resources*. For a discussion of the potential impacts to visual quality from representative off-site recreational areas, see Section 4.18, *Impacts on Visual Resources.*

Parks and Specially Designated Areas

The PSEGS could affect the recreation experience of visitors to Joshua Tree National Park and BLM-administered specially designated areas, which are described in PSPP PA/FEIS Section 4.12.2. Recreational users could be affected by construction and decommissioning activities such as construction noise, fugitive dust, vehicle movement, and other “non-natural” construction activities and structures caused by the PSEGS. These impacts could affect users’ perception of solitude, naturalness, and unconfined recreation.

As discussed in Section 4.2, *Impacts on Air Resources*, construction, operation and decommissioning activities could generate dust in the form of PM10/PM2.5. However, the worst-case PM2.5 and PM10 impacts occur at the point of emission and drop off quickly with distance. Therefore, the PSEGS would cause no impacts to recreational users within off-site recreational areas.

As discussed in Section 4.9, *Impacts on Noise*, typically, "high pressure steam blow" is the loudest noise encountered during construction of a project incorporating a steam turbine. Noise would attenuate such that the sound from the loudest noise associated with construction, the steam blow, would be barely audible at the nearest wilderness area boundary (approximately 1.25 miles). Once operational, the PSEGS would generate relatively the same noise levels described for the PSPP, and would have the same negligible noise effect on off-site recreational uses.

For impacts on resource values in Special Designation areas, see Section 4.15, *Impacts on Special Designations*.

Developed Recreation Sites

The same developed NPS and BLM campgrounds and LTVAs would be affected by the PSEGS as by the PSPP (see PSPP PA/FEIS Section 4.12.2, p. 4.12-3). Similar to the PSPP, they would be too far from the site to be affected by air or noise impacts.

The PSEGS would be visible from numerous dispersed recreational areas from which the PSPP would not have been visible, including the Mule Mountains LTVA and a portion of the Bradshaw Trail, due to the height of the PSEGS's towers. Views of the towers could alter the recreational experience in some of the dispersed areas by introducing large manmade structures into views of natural areas. For a discussion of the potential impacts to visual quality from scenic and recreational areas, see Section 4.18, *Impacts on Visual Resources*.

It is anticipated that some PSEGS construction workers would reside in RV campers at the Mule Mountains and Midland LTVAs, or possibly camp on public lands in the vicinity of the proposed site during the construction phase of the PSEGS. Although the BLM and NPS offer developed campgrounds within commuting distance of the PSEGS, only LTVAs allow long-term camping. Additionally, PSEGS workers and their families, if present, could result in increased use of the regional recreational resources described in Draft SEIS Section 3.12. The average PSEGS construction workforce would be approximately 75 percent greater than that of the PSPP, and the peak would be twice as large. Thus, the PSEGS could result in greater impacts related to the increased use of developed recreation sites compared to the PSPP.

As described in PSPP PA/FEIS Section 4.12.2 (p. 4.12-1 et seq.), except for the designated campsites at Wiley's Well and Coon Hollow, LTVA, which provide minimal facilities can accommodate several hundred self- contained RV units on BLM-administered lands where there are no assigned or designated sites. LTVA regulations require that RV units maintain a minimum distance of 15 feet between units. Current use levels of Mule Mountain and Midland LTVAs are well below maximum capacity. Therefore, it is unlikely that any displacement of recreational users to other LTVAs would be noticed due to the number, distance, and unstructured camping patterns of the other LTVAs in the system.

Impacts associated with PSEGS construction to on-site and off-site recreational users would be similar to the PSPP, except with respect to increased use by the substantially larger construction workforce, which could be greater than the impacts of the PSPP. Impacts related to the visibility of the towers from recreational sites would be greater than the PSPP and are described further in Section 4.18, *Impacts to Visual Resources*. Impacts associated with closure and decommissioning would likely benefit recreational values, since additional acres would be reclaimed and potentially made available again for recreational use.

4.12.3 Cumulative Impacts

PSEGS

Recreation impacts resulting from construction, operation, maintenance, and decommissioning of the PSEGS could result in a cumulative effect with other past, present, or reasonably foreseeable future actions (see Section 4.1.3, *Cumulative Scenario Approach*). Cumulative projects are identified in Table 4.1-1, *Cumulative Scenario*, and shown in Figure 4.1-1. As noise and air quality impacts on recreation sites would be localized and would attenuate substantially as distance from the source increases, only other cumulative projects in the nearby area, such as the Genesis Solar Energy Project, could combine with the PSEGS to result in cumulative noise and air quality nuisance effects to recreationists using areas immediately surrounding or between these projects.

The PSEGS's contribution to a cumulative impact on the loss of availability of land for dispersed recreation would be approximately the same as that of the PSPP. Within the California Desert District, approximately 142,302 acres potentially available for dispersed recreational use could be lost to solar development, and an additional 778,093 acres could be lost to wind development (see Table 4.1-2). The PSEGS's contribution would be approximately 3,896 acres or approximately 0.4 percent of this total impact.

Indirect effects on recreation-related use of lands in the cumulative impacts area also could result from the change in the overall character of undeveloped BLM-administered lands resulting from development of the cumulative projects. Changes to the visual landscape, impacts on vegetation, closure and development of roads, and related effects on wildlife may alter or reduce the recreational value of these lands for users seeking these attributes. The PSEGS would have a substantial contribution to the cumulative change in character that would result from the cumulative scenario primarily due to its visibility from recreational use areas up to 30 miles away.

Potential cumulative effects could occur during the proposed 34-month construction period or during the decommissioning period if the PSEGS and other current or future cumulative projects' workforces use the same camping facilities for temporary housing, resulting in a greater cumulative demand for limited spaces. Recreationists desiring to use these facilities could be unable to do so due to lack of availability, and/or could experience adverse changes in the character of the campgrounds due to higher-than-normal levels of use. However, most of the projects in the cumulative scenario are in areas with low recreation use.

Reconfigured Alternative 2

Option 1

The contribution of Option 1 to cumulative impacts on recreation would be the same as that of the PSEGS, with two exceptions. Its contribution to the conversion of land would include additional 310 acres of land that would no longer be available for dispersed recreational use, resulting in a greater overall and project-specific cumulative impact (a 0.5 percent contribution to the total potential conversion). However, it also would not build the two towers proposed under the PSEGS, and therefore would not be visible from as many locations as the PSEGS, resulting in a substantially reduced contribution to a cumulative impact resulting from changes in the natural character of dispersed and developed recreational sites.

Option 2

Like Option 1, Option 2 does not include the PSEGS's towers and would similarly avoid impacts related to their visibility from recreational sites. Option 2 would have the same types of contributions to cumulative impacts as the PSEGS and Option 1, but would occupy 3,965 acres, resulting in a contribution to the conversion of dispersed recreational land that is slightly greater than that of the PSEGS and slightly smaller than that of Option 1. (For reference, Reconfigured Alternative 2 (Options 1 and 2) are shown in Figure 2-4 and Figure 2-5, respectively; these are provided in PSPP PA/FEIS Appendix A.)

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no contribution to a cumulative impact on recreation would occur. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts similar to those of the PSEGS or PSPP.

4.12.4 Summary of Mitigation Measures

No additional mitigation measures are required.

4.12.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.12.6 Unavoidable Adverse Impacts

Approval of the PSEGS would result in no unavoidable adverse impacts on recreational resources.

4.13 Social and Economic Impacts

4.13.1 Impact Assessment Methodology

The social and economic impacts assessment methodology described in PSPP PA/FEIS Section 4.13.1 (p. 4.13-1 et seq.) was used to analyze the PSEGS in this Draft SEIS using the modeling results generated by Impact Analysis for Planning (IMPLAN) data and software that were relied upon in the PSPP PA/FEIS. IMPLAN modeling results have not been updated to investigate the consequences of projected economic transactions of the PSEGS in the eastern Riverside County region, or enable a comparison of the estimated direct or indirect economic benefits associated with construction, operation, closure and decommissioning-related expenditures resulting from the PSEGS relative to the PSPP.

Impacts on public services related to health and safety (e.g., police protection, fire protection, and emergency medical services) are analyzed in Section 4.11, *Public Health and Safety*. Impacts on parks and recreational opportunities are considered in Section 4.12, *Impacts on Recreation*. Visual impacts are considered in Section 4.18, Impacts on Visual Resources.

The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.13.2 (pp. 4.13-9, 4.13-10). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.13.3, below).

4.13.2 Direct and Indirect Impacts of the PSEGS

Construction

During construction, the PSEGS would result in the same types of benefits and impacts as the PSPP, though with differing intensity based on the increased size of the construction workforce and the shorter duration of the construction phase. See PSPP PA/FEIS Section 4.13.2 (p. 4.13-1).

Labor Force Impacts

The Applicant expects that construction would last 34 months, with an average of about 998 daily construction workers with a peak employment of 2,311 workers during month 22 of construction. This is in contrast to the PSPP, for which construction was expected to last 39 months, with an average of about 566 daily construction workers and a peak employment of 1,145 workers. Therefore, construction would occur over approximately 5 fewer months than the PSPP, but would employ approximately 75 percent more workers on average and 100 percent more during peak months. While no new IMPLAN study was prepared to estimate the indirect economic benefits of the PSEGS; it can be estimated that the direct and indirect economic benefit of employee compensation and spending would be greater under the PSEGS than the PSPP due to this larger workforce. The economic benefits of construction-related spending (e.g., on materials, fuels, and other locally sourced products and services) also are expected to be greater than the PSPP.

Table 4.13-1 shows Year 2010-2020 occupational employment estimates and projections for the Riverside-San Bernardino-Ontario MSA by construction labor skill as compared to the estimated number of total construction workers by craft needed during peak construction (month 22). The primary trades required for construction of the PSEGS would include pipefitters, skilled and unskilled laborers, electricians, carpenters, equipment operators, ironworkers, and truck drivers.

TABLE 4.13-1
PEAK MONTH CONSTRUCTION LABOR NEEDS AND TOTAL LABOR FORCE BY SKILL IN RIVERSIDE-SAN BERNARDINO-ONTARIO MSA

Trade	Peak PSEGS Skilled Construction Employment	Estimated Average Employment (2010)	Projected Annual Average Employment (2020)
Boilermaker	264	700[a]	670[a]
Carpenters	75	10,140	10,450
Cement Finisher	9	2,420	2,570
Electrician	359	4,000	4,520
Iron Worker	126	13,530	15,140
Laborer	82	11,870[b]	13,380[b]
Millwright	141	2,440[c]	2,830[c]
Equipment Operator	102	2,510	3,030
Pipefitter	508	3,160[d]	3,570[d]
Teamster	25	32,410[e]	40,630[e]
Instrument Tech	12	260[f]	300[f]
Craft Labor Subtotal	*1,703*		
Unspecified and Other Non-Craft	608	--	--
Total	**2,311**[g]	**83,440**	**97,090**

NOTES:
a "Structural Iron and Steel Workers" category was used.
b "Construction Laborers" category was used.
c "Machinists" category was used.
d "Plumbers, Pipefitters, and Steamfitters" category was used.
e "Heavy and Tractor-Trailer Truck Drivers" and "Light Truck or Delivery Services Drivers" categories were used.
f "Electro-mechanical Technicians" category was used.

SOURCE: EDD, 2012

Table 4.13-1 shows that there is a large population of suitably skilled construction workforce for the PSEGS currently living within Riverside and San Bernardino counties.[1] The "unspecified and other non-craft" workers shown in Table 4.13-1 would consist of unspecified contractors, Project owner personnel, compliance support personnel, and other workers that may fall into numerous occupational categories, and may also be drawn from Riverside and San Bernardino counties. However, only a portion of these workers could be expected to be currently living within the region. As described in PSPP PA/FEIS Section 3.14.2 (p. 4.13-4), based on the regional study area's estimated 2010 population of 559,968 residents, which is 13.3 percent of the Riverside-San Bernardino-Ontario MSA population of 4,212,684, the regional study area's skilled labor

1 Given its more rural character and the far smaller size of its labor force, only a very minor proportion of future construction workers would be expected to originate from La Paz County in Arizona. For this analysis, it is conservatively assumed that all construction workers for the PSEGS would be California residents.

force would likely be 13.3 percent or less of the skilled workforce shown in Table 4.13-1. Overall, that would suggest a total skilled labor force of approximately 11,100 workers living within the regional study area.

Applying the current local unemployment levels of 12.2 percent shown in Table 3.14-2 would suggest that approximately 1,350 unemployed skilled workers may currently reside in the regional study area. Compared with the required peak craft labor employment need of 1,703 workers, the PSEGS could employ more than the estimated currently unemployed construction workers. While this would represent a major proportion of the region's skilled workforce, there also could be individuals among the region's other unemployed workers that have or could obtain the necessary training to perform the facility construction. Also, it is likely that some of the currently employed skilled local construction workers would change their jobs in order to work closer to home and their positions could be filled by other workers living outside of the regional study area.

Housing Impacts

Based on the above analysis, it is expected that most, if not all, of the construction employment for the PSEGS would consist of construction workers who live within a 2-hour commute from the site. Employee ride sharing (which would be encouraged and incentivized under APM TRANS-4, in Appendix C), and the relatively long duration of the work would likely encourage workers to commute considerable daily distances to work on the PSEGS. However, if there are insufficient suitable local workers to meet project needs, then the PSEGS could attract individuals to relocate to the regional or local study area either temporarily or permanently, which could result in an increased demand for housing and local services.

The housing vacancy rates indicated in PSPP PA/FEIS Section 3.14, Table 3.14-2 (p. 3.14-8), are relatively high, with 16.1 percent vacancy in Blythe (approximately 880 units), up to 34.9 percent in Ehrenberg (approximately 287 units), and up to 41.9 percent in Quartzsite (approximately 1,483 units). Altogether, it is conservatively estimated that up to approximately 2,650 existing housing units could be available as potential housing for future construction workers (this estimate does not account for other potential available housing within the unincorporated local study area). Although the PSEGS would have a greater construction workforce than the PSPP, for the same reasons described in PSPP PA/FEIS Section 4.13.2, it is anticipated that there would be adequate housing supply in the local study area, either in vacant housing units or in hotel/motel rooms or, in limited cases, RV campgrounds, for any construction workers who would choose to move closer to the site during construction.

Similar to the PSPP, because construction would be temporary and most or all workers would be expected to come from within a 2-hour commute area, the PSEGS would not induce substantial growth or concentration of population in either the regional or local study areas.

Economic Impacts

Like the PSPP, construction-related spending for the PSEGS would be an economic benefit, most likely within Riverside County. As described in PSPP PA/FEIS Section 4.13.2 (p. 4.13-6), the IMPLAN input-output model estimated that the PSPP would result in $67.3 million in annual construction labor payroll, and $9.2 million in annual capital expenditures and local spending on construction materials, equipment, and service. For the PSEGS, due to the increased construction workforce, it can be estimated that the construction labor payroll would be approximately 75 percent greater on average, or approximately $115 million per year. Construction spending would likely be similar to the PSPP, resulting in a total of approximately $124 million per year in direct economic output. Based on the results of the PSPP IMPLAN model, shown in Table 4.13-2 of PSPP PA/FEIS Section 4.13.2 (p. 4.13-7), indirect economic output could be approximately 20 percent of this total, and induced output could be approximately 50 percent. Consequently, the PSEGS total economic output would be considerably greater than the PSPP, with a total of up to $200 million per year.[2]

Like the PSPP, the actual future economic impact of the PSEGS for eastern Riverside County could be smaller than the total economic benefits described above. Project-related spending would benefit eastern Riverside County and the local economies depending on the extent that workers live and spend their earnings at businesses locally and elsewhere in eastern Riverside County. Given the local study area's rural character, most of the projected benefits would likely be received by the larger cities and communities located elsewhere in eastern Riverside County, outside the local study area.

Social Character

The potential impacts of the PSEGS on the social character of the local study area would be similar to those of the PSPP, though increased in proportion to the PSEGS's increased construction workforce. However, like the PSPP, the PSEGS is expected to have a minor and largely positive impact on the social character of the local study area for the duration of facility construction. See PSPP PA/FEIS Section 4.13.2 (p. 4.13-8).

Operation

During operation, the PSEGS would employ approximately 100 permanent full-time personnel, which would be lower than the PSPP's 134-person operational workforce. The California EDD projects that by 2020, there will be approximately 10,360 maintenance and repair workers, and 1,910 plant and system operators in the Riverside-San Bernardino-Ontario MSA (EDD, 2012). As described above, the population of eastern Riverside County is estimated to be 13.3 percent of the total population of the MSA, indicating an operational labor force of approximately 1,378 maintenance and repair workers and 212 plant and system operators. At the time of preparation of the PSPP PA/FEIS, future labor force projections were substantially lower than those prepared by EDD in 2012, and the PSPP operational workforce was greater than the PSEGS. For reasons described in PSPP PA/FEIS Section 4.13.2 (p. 4.13-13), the PSPP's operations were not expected to result in population growth either directly or indirectly that would be major in magnitude or adverse in nature. Because the PSEGS would have a smaller operational workforce, and because the available labor force is projected to be greater than

[2] $124 million plus 70 percent (20 percent indirect and 50 percent induced), rounded to $200 million to account for uncertainty.

previously thought, the PSEGS would have a reduced impact on population growth compared to the PSPP, and therefore, it would not be expected to result in major or adverse population growth.

Operational spending and economic impacts would likely be similar to the PSPP, and would be beneficial in nature, though decreased due to the smaller operational workforce. See PSPP PA/FEIS Section 4.13.2 (p. 4.13-8).

Closure and Decommissioning

Similar to the PSPP, closure of the PSEGS would result in job losses for the operations workforce and revenue losses to local businesses relying on operations-related or employee spending. However, the number of job losses would be fewer as the PSEGS operational workforce is projected to be approximately 25 percent smaller than the PSPP's operational workforce.

There is insufficient information to reliably project the conditions when decommissioning of the proposed facilities would occur in 30 to 50 years into the future. Consequently, it would be speculative to try to characterize future circumstances under which facility closure and decommissioning would occur. However, it is anticipated that the types of decommissioning-related impacts would be similar to the construction impacts of the PSEGS, described above. The magnitude and duration of these impacts would likely be somewhat reduced, as the decommissioning process would not require facility startup and testing.

Consequently, like the PSPP, the economic impacts associated with decommissioning initially could be positive from the increased employment and business spending over the relatively brief duration of the deconstruction and site restoration activities. However, following the completion of the decommissioning process, there would be some adverse long-term economic impacts to the local area economy from the loss of the solar facility's employment and annual spending.

The social impacts of closure and decommissioning would be similar to those of the PSPP, as described in the PSPP PA/FEIS.

4.13.3 Cumulative Impacts

PSEGS

The potential for cumulative social and economic impacts exists where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could affect similar resources. Projects with overlapping construction schedules and/or operations could collectively result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of non-local workers and possibly their dependents. This population increase could impact social and economic resources if there are insufficient housing resources and/or infrastructure and public services to accommodate the new residents' needs.

Section 4.1.3 identifies current solar and non-solar projects that have been or could be developed in the foreseeable future within eastern Riverside County. While a large number of projects may be planned, and so considered to be possible for future development, not all of them are expected actually to be built due to construction funding constraints, schedule, delays, or other factors. Given the uncertain and challenging economic circumstances facing federal and state economies as well as private developers, it is far from assured that future funding and other necessary support will be sufficiently available for all of the proposed projects to be realized within the projected schedules.

As shown in Table 4.1-2, 37 BLM renewable energy projects have been approved or are proposed within the California Desert District. In addition, other non-renewable energy projects (Table 4.1-1) and projects identified on state and private lands (Table 4.1-3) could require workers with similar skills to the PSEGS, including non-BLM renewable energy projects, transmission lines, and electrical substations. The geographic scope of the cumulative impacts analysis includes populated areas within a 2-hour commute distance of the PSEGS. Although the 2-hour commute distance would extend into Arizona, the low population in western Arizona would contribute minimally to the available labor pool in the geographic scope. Therefore, the analysis for employment focuses on the California portion of this area.

There are approximately 18 solar projects proposed or under construction along the I-10 corridor, predominantly between Desert Center and Blythe. Based on the currently available data for these various projects (information obtained from Plans of Development and other project documents), and assuming all projects move forward, these projects could be constructed in the same general timeframe as the PSEGS, or have the potential to overlap for at least a portion of the construction period.

The cumulative analysis conservatively assumes that the construction of all of the proposed solar projects would be under construction within the 34-month cumulative timeframe for construction-related impacts of the PSEGS. This cumulative impacts discussion is based on available data with respect to both construction schedules and the PSEGS's labor requirements. If construction and operating labor requirements are not known for some projects, average workforce levels of other comparable projects and professional judgments have been used to develop conservative estimates of expected cumulative labor requirements for these projects.

Construction

Cumulative Construction Labor Needs

Table 4.13-2 shows the currently available data about project construction workforces for several of the projects in the cumulative scenario (including the PSEGS). These numbers were used to estimate the average and peak construction workforces per MW of solar projects, which were then used as workforce estimates for those projects in the cumulative scenario for which no workforce data is available.

If all of the 18 solar projects identified in eastern Riverside County are constructed (including this project), a total of 4,897 MW of new solar power generation would be developed. The average solar power project would be approximately 272 MW in size and may be expected to require an average of approximately 360 full-time equivalent (FTE) construction workers and a peak of

TABLE 4.13-2
AVERAGE AND PEAK CONSTRUCTION EMPLOYMENT FOR CUMULATIVE SCENARIO SOLAR PROJECTS

Project	MW	Average Workers	Peak Workers
Palen	500	998	2,311
McCoy	750	341	750
Genesis	250	646	1,085
BSPP	485	430	619
Desert Sunlight	250	450	570
Rice	150	280	438
Column Total	2,385	3,145	5,773
Average for all Projects (per MW)		1.32	2.42

SOURCE: BLM, 2005, 2010a, 2010b, 2011, 2012; CEC, 2010; CPUC, 2006, 2011.

660 workers to be built.[3] Because the precise construction schedules for each project are currently unknown, this analysis assumes that the peak construction periods of the solar projects in the cumulative scenario would be of a similar length to the project (approximately 3 months). Project developers would likely seek to minimize the construction occurring during the hottest summer months and may therefore stagger their construction periods accordingly. Consequently, some seasonality may be expected to occur as developers favor more construction during the region's cooler winter months. It is assumed that peak construction needs for each of the solar projects would be approximately evenly spread throughout the 34-month period for cumulative construction-related impacts. If all of the projects experienced their peak construction during the 34-month cumulative temporal scope, the regional labor need for a realistic, but highly conservative, estimate would be for four to six projects to have peak labor needs during the same winter season. Therefore, this analysis assumes that the equivalent of five average (272 MW) solar projects could experience peak construction at one time, while the others may experience average construction employment levels. This gives an average cumulative solar workforce of approximately 8,000 workers.[4] Under the extremely improbable circumstance that peak construction of all 18 planned solar projects happens concurrently, they would require a maximum of 11,900 construction workers at one time.

In addition to the solar projects described, other projects that could require similar types of construction labor would include wind projects, the DPV2 Transmission Line, Desert Southwest Transmission Line, and Red Bluff Substation, and Colorado River Substation projects. The DPV2 project is estimated to require 211 construction workers (CPUC, 2006) for the segment to be constructed within a reasonable commute distance of the PSEGS. The Red Bluff Substation is estimated to require up to 30 construction workers (BLM, 2011). The Colorado River Substation

[3] This is based on an estimated average construction labor need of approximately 1.32 construction workers (FTE) per MW of solar power production capacity on average and 2.42 workers per MW during peak construction, see Table 4.13-2.

[4] Final cumulative workforce estimates are rounded to reflect the uncertainty that results from making assumptions about projects for which data is not currently available.

project is estimated to require up to 40 construction workers (CPUC, 2011). The Desert Southwest Transmission Line project is estimated to require an average of 71 construction workers (BLM, 2005). Adding these workforces to the average solar construction workforce derived above yields a total of approximately 8,300 workers.

Because it is likely that not all of the cumulative projects would be under construction for the entire 34-month Project construction period, the actual cumulative construction workforce may be lower. However, it is reasonable to assume that other future projects that are not yet known for this Project's cumulative scenario may begin construction later in this time period. For this reason, a rounded winter-season peak of approximately 8,000 construction workers is used in this analysis.

The Project's maximum potential contribution to this cumulative effect would be approximately 29 percent during its own peak construction period. The Project's average contribution to the cumulative impact would be approximately 13 percent during its non-peak construction.

Regional Labor Force Supply

As Table 3.14-3 illustrates, the total work force of skilled construction workers currently living in the Riverside-San Bernardino-Ontario MSA is estimated to be approximately 67,610 (Table 3.14-3). Assuming that these workers are distributed throughout the MSA in the same proportion as the total population, the total construction work force within the Riverside County would be approximately half of this, or 33,800 workers, and the total within eastern Riverside County would be approximately 9,000, or 13 percent of the MSA. Future demand for 8,000 construction workers would exceed the capacity of the current skilled labor force. Although the population of skilled construction workers in the Riverside-San Bernardino-Ontario MSA is expect to increase by approximately 11.5 percent by 2020 (Table 3.14-3), even if this level of growth occurred in the geographic scope, the cumulative labor force demand would still represent nearly all of the local area's currently forecasted future skilled construction labor force, and would be a very large portion of Riverside County's forecasted future skilled construction labor force.

The current unemployment rate in Riverside County is estimated to be 12.2 percent (see Table 3.14-2). Applying this rate to the skilled construction workers in eastern Riverside County yields an estimate of approximately 1,100 unemployed construction workers, and in all of Riverside County, 4,120 unemployed workers. The cumulative construction worker demand would represent far more than this number. Although many of the region's currently unemployed residents may lack transferable skills or have the physical aptitude to acquire the necessary skills required to serve the cumulative labor demand, many residents could be trained to be employable by these projects. Further, some of the construction work would be more entry-level positions which may be suitable for less skilled workers.

Some of the regional workforce currently employed in other sectors also could have the capabilities to qualify for project construction work. In such cases, some job transferring may occur, particularly because the construction jobs may be expected to be relatively well-paid and attractive for many local residents. The less skilled or desirable jobs vacated by individuals transferring to construction work could be filled by other less skilled unemployed residents.

Housing and Lodging Impacts

Notwithstanding the potential for employed and unemployed non-construction workers to qualify for the construction jobs of the cumulative scenario, there would be a demand for construction workers that would exceed the available labor supply within the geographic scope. It is assumed that those job positions would be filled by workers relocating into the region from elsewhere.

Given the numerous variables discussed above, it is difficult to project the extent of future weekly commuting or other in-migration that would be necessary to meet the future cumulative labor needs within the region. However, considering that workers may commute from up to 2 hours away, it is assumed that up to approximately 4,000 construction workers could require temporary housing in the local area or within Riverside County.

Based on State Employment Development Department data (EDD 2013a, 2013b), the skilled construction labor force within San Bernardino County is estimated to be approximately equal to that of Riverside County. This suggests that there is likely to be a considerable additional potential labor force available willing to commute weekly or to relocate temporarily to Riverside County, most likely to communities near the solar and other project sites. Consequently, from a broader geographic and labor force perspective, no significant shortages of adequately skilled construction workers is foreseen, provide that adequate suitable housing is available for relocating near the work sites.

The cumulative influx in construction labor to the county could create demand for temporary housing that is greater than the existing supply of temporary lodging. As discussed in the PSPP PA/FEIS (p. 4.13-5), private and public RV/campgrounds are not expected to be suitable or attractive lodging options for most construction workers seeking local accommodations. PSPP PA/FEIS Table 3.14-2 (p. 3.14-9), indicates that there are approximately 55,000 vacant housing units available in eastern Riverside County. Additionally, as indicated on PSPP PA/FEIS page 3.14-11, there are over 15,000 hotel or motel rooms within 2 hours' commuting distance of the project site. This would be sufficient to temporarily house the approximately 4,000 construction workers that could move into the county as a result of the cumulative projects. However, the cumulative scenario would exceed the capacity of the local area communities to adequately house these workers, so many would need to commute up to the full 2 hours to the site.

Furthermore, during the same time period with the greatest potential for adverse impacts resulting from the cumulative demand for construction worker housing, there also would be a major positive economic stimulus to the local area and eastern Riverside County economies associated with the solar development. This economic infusion could result in the construction or availability of additional rental units and so could offset a portion of the housing need-related impact.

In summary, this analysis suggests that future construction labor demand would exceed the existing local workforce within eastern Riverside County. Therefore, there may be increased demand for temporary local housing from construction workers seeking to commute weekly to the local area. Given the estimated availability of lodging and possible rental housing, it is expected that there could be a shortage of adequate and suitable housing to meet all future construction worker temporary housing demand. Some short-term adverse cumulative social and economic impacts could result, such as potential increased rents for local residents seeking housing or potential losses in visitor-generated spending. As hotels, motels, and campgrounds could be operating at maximum occupancy during this period, this could mean that potential vacationing visitors to the area would find increased room rates or no availability. It is expected that these temporary impacts would be offset as the local area and eastern Riverside County economies would experience a positive economic stimulus associated with the cumulative solar developments.

Operations

If all of the cumulative projects are constructed, a total of 4,897 MW of new solar power generation would be developed. As shown in Table 4.13-3, the average solar project is estimated to require approximately 0.12 operational employees for each MW of solar power production. Consequently, if full build-out of the planned solar development occurs, the future cumulative operational employment in the region would be approximately 550. The PSEGS's 100 operational jobs represent an approximately 18 percent contribution to the cumulative operation and maintenance related needs. It is not anticipated that the other non-solar projects considered for cumulative social and economic impacts (new electrical substations and new and expanded transmission lines) would contribute noticeably to the cumulative operational employment demand.

TABLE 4.13-3
OPERATIONAL EMPLOYMENT FOR CUMULATIVE SCENARIO SOLAR PROJECTS

Project	MW	Employees
Palen	500	100
McCoy	750	20
Genesis	250	65
BSPP	485	20
Desert Sunlight	250	15
Rice	150	47
Column Total	2,385	267
Average for all Projects (per MW)		0.12

SOURCES: BLM, 2005, 2010a, 2010b, 2011, 2012; CEC, 2010; CPUC, 2006, 2011.

As shown in Table 3.14-1, there are 20,300 workers in the "Transportation, Warehousing & Utilities" industry group in Riverside County. In the absence of more precise data on available skills, this industry group is used as the available labor pool for this analysis. Although not all workers in this category may possess the skills required for solar power plant operation and maintenance, there would be opportunities for the transferability of other skills, on-the-job and local community college training and a lower skilled qualification requirement for some of the available jobs. Based on current unemployment rates, it is assumed that approximately 2,476 of these workers would be available to meet operational labor needs. Therefore, it is not expected that any in-migration of operational workers would be needed to meet the cumulative scenario's operational labor need, and there would be no cumulative impact during operations on housing and lodging.

Decommissioning

Evaluating the PSEGS's cumulative impacts when future facility decommissioning occurs is highly speculative. Decommissioning is expected to occur after 30 to 50 years of operation. It is not possible to project with confidence the likely future social and economic conditions of the local and regional study area. Similarly, the extent to which the projects in the cumulative scenario would undergo decommissioning concurrently is unknown.

Nonetheless, PSEGS decommissioning is expected to require a workforce similar to the construction phase, and the PSEGS is expected to be one of many similar solar projects within eastern Riverside County. As such, its contribution to cumulative social and economic effects would be proportional to: (a) its size relative to the other development projects in the region; and (b) the collective size of projects undergoing decommissioning or construction at that time. Although the cumulative effects of construction were found to be potentially adverse based on a shortage of temporary housing, decommissioning would not likely overlap with as many projects as construction, and in over 30 years' time, based on regional population growth trends, it is likely that there would be more local workers and more temporary housing options available to accommodate decommissioning needs.

Reconfigured Alternative 2 (Option 1 and 2)

During construction, operation, maintenance, and decommissioning, project-related spending and workforce associated with Reconfigured Alternative 2 (Option 1 and 2) are anticipated to be very similar to the PSEGS as described above. Therefore, the cumulative impact analysis for Reconfigured Alternative 2 (Option 1 and 2) is expected to be the same as for the PSEGS.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no contribution to a cumulative social or economic impact would occur. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts similar to those of the PSEGS or PSPP.

4.13.4 Summary of Mitigation Measures

No mitigation measures are required.

4.13.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.13.6 Unavoidable Adverse Impacts

No unavoidable social or economic impacts would be expected to be associated with the PSEGS or alternatives.

4.14 Impacts on Soils Resources

4.14.1 Impact Assessment Methodology

The soils resources impact assessment methodology described in PSPP PA/FEIS Section 4.14.1 (p. 4.14-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.14.2 (pp. 4.14-6 through 4.14-8). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.14.3 below).

4.14.2 Direct and Indirect Impacts of the PSEGS

Erosion

Soil characteristics at the project site allow for the potential for wind and water erosion (see PSPP PA/FEIS Section 3.15 and Draft SEIS, Section 3.15). Construction activities associated with the PSEGS such as site grading, excavation, and soil stockpiling would generate loose, exposed soil that could erode from rainfall and high winds. Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or down-slope movement in response to gravity. Due to generally flat terrain however, the project site is not prone to significant down slope erosion and sediment transport.

During construction, grading would occur at parts of the solar plant site and those portions of the ROW supporting off-site linear facilities (i.e., gen-tie line, telecommunications line, natural gas line, and site access road). At that time, the surface of the disturbed areas would be devoid of vegetation thereby creating the highest potential for erosion and associated effects. These effects could include loss of topsoil and increased sediment yields downstream from disturbed areas.

The PSEGS incorporates less grading and vegetation removal than estimated in the PSPP PA/FEIS for the PSPP. The amount of grading expected for the PSEGS is 200,000 cubic yards, reduced from the 4.5 million cubic yards analyzed in PSPP PA/FEIS Section 4.14.2 (p. 4.14-2). Less grading is expected because the PSEGS does not require an engineered flat surface under the solar arrays. Other project components, such as the power tower and power block areas, would require significant grading. These components have a smaller footprint than the solar arrays. By decreasing the amount of grading required under the PSPP, less soil would be moved from its current location, which consequently decreases the potential for erosion to occur. Nonetheless, the Applicant has committed to implementing the relevant mitigation measures identified in PSPP PA/FEIS Section 4.14.4 (p. 4.14-10) as APMs to avoid and minimize direct and indirect impacts to soil resources (see Appendix C). These measures include plans to reduce, control and mitigate erosion and mobile dust during and after construction. In addition, the Applicant is required to implement a Drainage Erosion and Sediment Control Plan and appropriate geotechnical recommendations.

Sand Transport

The PSEGS has been designed to reduce impacts on sand transport through the placement of the project and removal of wind fences. In the PSPP PA/FEIS, it was determined that the PSPP could be configured to avoid the sand transport area, and thus reduce the impacts to sand dune habitat in the area. This alternative is described and analyzed in the PSPP PA/FEIS as Reconfigured Alternative 2. The PSEGS has been designed to fit within the Reconfigured Alternative 2 footprint, and so also avoids the sand transport area. The PSEGS also proposes to eliminate the 30-foot wind fences, which in the original PSPP plan of development were expected to create “sand shadows” that could cut off dunes downwind of the site from the sand supply necessary to maintain dune sand in volumes that support wildlife habitat. With these changes incorporated into the PSEGS, impacts to sand transport and dune habitat would be avoided.

4.14.3 Cumulative Impacts

PSEGS

Impacts to soils resources resulting from construction, operation, maintenance, and decommissioning of the PSEGS could result in a cumulative effect with other past, present, or reasonably foreseeable future actions (see Section 4.1.3). Cumulative projects are identified in Table 4.1-1 and shown in Figure 4.1-1. The geographic scope of the cumulative effects analysis for soils is comprised of: (a) the Mojave Desert Air Basin because wind can transport soils offsite, and (b) the watershed boundary because surface flows also could carry eroded soils off-site. Potential cumulative effects on soils resources could occur at any point during the overall lifespan of the PSEGS, from pre-construction activities to the conclusion of facility closure and site restoration. As of May 2013, there were 106 renewable projects proposed in California in various stages of environmental review or under construction, down from the 244 identified in the PSPP PA/FEIS.

It is expected that some of the cumulative projects described in Section 4.1 that are not yet built may be under construction at the same time as the PSEGS. In addition, it is expected that others of the cumulative projects may be operational at the same time as the project. Construction and decommissioning of the PSEGS would result primarily in construction-related changes at the site that would increase local wind-borne soil erosion and storm water runoff-related erosion. However, as a result of the implementation of the APMs, the PSEGS would be expected to contribute only a small amount to any possible construction-related erosion impact. Section 4.19, *Water Resources*, concluded that the cumulative soil erosion implications of the PSEGS would not be appreciably different from those of the PSPP, and short- and long-term cumulative impacts to soils erosion during construction and operation is expected.

PSPP PA/FEIS Section 4.14.3 (p. 4.14-10) identified cumulative impacts to sand dunes and related features in sand transport corridors due to the footprint of the PSPP, and concluded that residual impacts to sand transport corridors would be avoided if the PSPP was built within the footprint of Reconfigured Alternative 2. The PSEGS footprint lies within Reconfigured

Alternative 2 footprint, and therefore cumulative impacts to sand dunes and related features are not expected.

Reconfigured Alternative 2 (Option 1 and Option 2)

Reconfigured Alternative 2 could be expected to contribute to a cumulative impact on soil resources similar to the PSEGS in proportion to the amount of soil disturbance that could occur for this alternative (which as discussed is substantially greater than for the PSEGS) and based upon the respective degree of interference in the sand dune or alluvial soil zones.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no contribution to a cumulative impact on soil resources would occur. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts to soil resources similar to those of the PSEGS or PSPP.

4.14.4 Summary of Mitigation Measures

No mitigation measures are required.

4.14.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.14.6 Unavoidable Adverse Impacts

Approval of the PSEGS would not result in any unavoidable adverse impacts to soils resources.

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4.15 Impacts on Special Designations

4.15.1 Impact Assessment Methodology

The impact assessment methodology for special designations used in PSPP PA/FEIS Section 4.15.1 (p. 4.15-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.15.2 (pp. 4.15-2, 4.15-3). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.15.3, below).

4.15.2 Direct and Indirect Impacts of the PSEGS

National System of Public Lands

There are no special designations on the proposed solar plant site. The PSEGS would not construct the redundant telecommunications line parallel to I-10 within the Chuckwalla DWMA (an ACEC) as was proposed for the PSPP in the PSPP PA/FEIS. Additionally, while the portion of the PSEGS's gen-tie line that would be south of I-10 differs from the analogous portion of the gen-tie line analyzed in the PSPP PA/FEIS, it would continue to be located within the Chuckwalla DWMA, impacting approximately 3.2[1] acres (slightly smaller than 3.63 acres for the PSPP). The addition of 3.2 acres associated with the PSEGS would not exceed the 1 percent limit (not more than 8,201 acres of new surface disturbance) established under the NECO Plan. Therefore, the PSEGS would not result in an adverse effect to the Chuckwalla DWMA.

The PSEGS would not directly impact (e.g., through surface disturbance) the Palen Dry Lake, Corn Springs, Alligator Rock, Desert Lily Preserve, and Chuckwalla Valley Dune Thicket, and Mule Mountains ACECs although it could be visible from them. Because these areas were established to protect biological and cultural resources, visitor use in these areas is a secondary resource benefit. The potential visibility of the PSEGS would not affect the primary resource protection purposes of these ACECs.

Similarly, the PSEGS would not directly impact (but could be visible from) the Palen/ McCoy, Chuckwalla Mountains, and Little Chuckwalla wilderness areas; a portion of the Bradshaw Trail; and the Joshua Tree National Park and Wilderness units. For a discussion of the potential impacts to visual quality from specially designated places, see Section 4.18, *Impacts on Visual Resources*.

With respect to indirect short-term or long-term impacts to users of surrounding wilderness areas due to construction, operation or decommissioning activities, the PSEGS would have impacts similar to the PSPP on opportunities for solitude and primitive unconfined recreation relating to increased motorized activity in the area (see Section 4.16, *Impacts on Transportation and Public*

[1] For purposes of a conservative analysis, the BLM assumes the permanent disturbance would include the 120-foot-wide by 0.22-mile-long corridor since the exact number of poles to be installed within the DWMA is not available at this time.

Access - Off Highway Vehicle Resources) and the introduction of industrial features into the landscape (see Section 4.18, *Impacts on Visual Resources*). See also Section 4.12, *Impacts on Recreation*, which discusses and finds no indirect impacts to recreational users, including those using BLM-managed wilderness areas and ACECs, from any changes to air quality or noise that would occur as a result of the PSEGS.

National Park System

The PSEGS would have similar indirect impacts to Joshua Tree National Park and the Joshua Tree Wilderness as the PSPP with respect to air quality, noise, wildlife, and lighting. The PSPP PA/FEIS concluded that potential impacts to NPS units due to increased use would be adequately addressed by the mitigation measures proposed in Section 4.15 (MM-SD-01 and MM-SD-02). These mitigation measures provide the NPS with opportunities to review relevant pre-construction plans to provide input on reducing impacts to NPS units, and to be reimbursed for costs incurred through monitoring construction dust and noise and temporary and permanent exterior nighttime lighting. The Applicant has incorporated those mitigation measures as APMs in this Draft SEIS (see Appendix C). Given the implementation of these measures, impacts on *National Park System* lands would be minimized.

As described in Section 4.12, *Impacts on Recreation,* the PSEGS would have a larger construction workforce, and therefore could result in greater impacts related to increased use of park facilities. The PSPP PA/FEIS concluded that potential impacts to NPS campgrounds due to increased use would be adequately addressed by the Signage and Guidance Plan mitigation measure (MM-SD-03) proposed in Section 4.15. The Applicant has incorporated this measure as an APM in this Draft SEIS (see Appendix C). Given these measures and the absence of any support facilities, informal camping within Joshua Tree National Park by construction workers is expected to be limited. The PSEGS with APMs incorporated would result in a minor impact on the NPS camping facilities and natural resources from construction workers.

4.15.3 Cumulative Impacts

PSEGS

Incremental impacts on areas with special designations resulting from the PSEGS could combine with the impacts of past, present, or reasonably foreseeable future actions to cause or contribute to a cumulative impact. Since approval of the NECO ROD, there has been approximately 7.25 acres of permanent surface disturbance caused by other projects within the Chuckwalla DWMA. To this, the PSEGS would add approximately 3.2 acres of disturbance within the Chuckwalla DWMA. As described in PSPP PA/FEIS Section 4.15, future foreseeable projects including the DPV2 Transmission Line Project (approximately 13 acres), Desert Southwest Transmission Line (499 acres), and the Red Bluff Substation (90 acres) could result in approximately 602 acres of new surface disturbance within the Chuckwalla DWMA (PSPP PA/FEIS, p. 4.15-12). With the existing disturbance and the PSEGS, the total disturbance in the DWMA would be up to approximately 613 acres, of which the PSEGS contribution would represent approximately 0.5 percent. The total cumulative disturbance would be less than the

1 percent limit established under the NECO Plan. Therefore, the PSEGS would not contribute to an adverse cumulative effect on the DWMA.

The geographic scope for potential cumulative indirect impacts on specially designated areas includes the range of areas from which sights, sounds, pollutants, or other effects of these projects could affect the users of specially designated lands and/or conflict with the management objectives of each area. Numerous energy-related development projects, including the PSEGS, could adversely affect views from the specially designated areas described in Section 3.16, *Impacts on Visual Resources*, by adding structures, fences, and other features that could cause glint or glare or otherwise interrupt landscape views; would result in increased noise caused by equipment required for construction and operation, motor vehicle use, voices, music, or other worker-related sounds; and could result in adverse air quality impacts, such as fugitive dust. Any of these activities individually or in combination could cause some users to seek out other areas of the desert for their wilderness activities and experiences. Potential cumulative visual effects are described in depth in Section 4.18, *Impacts on Visual Resources*. As described in Section 4.9, *Impacts on Noise*, the geographic scope of the cumulative effects analysis for noise and vibration is limited to the distance over which sounds generated by the PSEGS could be heard, i.e., within approximately 1 mile of the site. No existing or foreseeable projects are located within the cumulative effects area for noise or vibration; therefore, impacts of the PSEGS could not combine with the incremental impacts of other projects in the cumulative scenario. As described in Section 4.2, *Impacts on Air Quality*, fugitive dust emissions generally would have a more localized impact, with the most noticeable impacts occurring within one-half mile or less of the site. Similar to the noise analysis, no existing or foreseeable projects are located within this cumulative effects area; therefore, no cumulative fugitive dust impacts would result, and the PSEGS would not contribute to a cumulative indirect noise or air quality effect on specially designated lands.

Reconfigured Alternative 2

Option 1

The contribution of Option 1 to cumulative impacts on special designations would be the same as that of the PSEGS, except with respect to indirect visual impacts. This option would not build the two towers proposed under the PSEGS, and therefore would not be visible from as many locations as the PSEGS, resulting in a substantially reduced contribution to a cumulative impact resulting from changes in views from specially designated areas.

Option 2

Like Option 1, Option 2 does not include the PSEGS's towers and would similarly avoid impacts related to their visibility from specially designated areas. Other cumulative actions would be similar to those analyzed for the PSEGS.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no contribution to cumulative impacts to special designations would occur. However, the ROW application area is located within the Riverside East SEZ, and so the CDCA Plan Amendment made in the ROD for the Solar PEIS, which identifies the area as suitable for any type of solar energy development, would be in effect for future projects. As a result, this site could be developed using solar thermal trough, solar thermal power tower, or another solar power technology in the future, potentially resulting in cumulative impacts similar to those of the PSPP or PSEGS.

4.15.4 Summary of Mitigation Measures

No mitigation measures are proposed.

4.15.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.15.6 Unavoidable Adverse Impacts

Approval of the PSEGS would result in no unavoidable adverse impacts on special designations.

4.16 Impacts on Transportation and Public Access – Off Highway Vehicle Resources

4.16.1 Impact Assessment Methodology

The transportation and public access – off highway vehicle resources impact assessment methodology used in PSPP PA/FEIS Section 4.16.1 (p. 4.16-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.16.2 (pp. 4.16-6, 4.16-7). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.16.3 below).

Public Access

As discussed in the PSPP PA/FEIS and applicable to the PSEGS, the CDCA and NECO plans, which include a detailed inventory and designation of open routes in the vicinity of the PSEGS, were reviewed to determine impacts to open routes.

Transportation

This analysis focuses on potential impacts related to the construction, operation and decommissioning of the PSEGS on the surrounding transportation systems and roadways based on information provided by the Applicant. For impacts to local transportation systems, impacts were evaluated based on level of service (LOS) determinations, which is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of *speed*, *travel time*, and *delay*.

As applied in the PSPP PA/FEIS and similarly to the PSEGS, the methodology contained in the *Highway Capacity Manual 2000* was used to determine potential impacts to intersections from operations of the PSEGS. This methodology was used to assess delays at an unsignalized intersection for movements operating under traffic control—a stop sign, for example. For an intersection at which the only stop-sign is placed at a side street, delay would be reported for movements controlled by the stop sign. The delay then would be assigned a corresponding letter grade to represent the overall condition of the intersection or level of service. These grades range from LOS A, free-flow, to LOS F, poor progression.

The assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the pre-PSEGS conditions to the post-PSEGS conditions.

4.16.2 Direct and Indirect Impacts of the PSEGS

Public Access

OHV Routes

The PSEGS would be located in substantially the same location as the PSPP, and so would affect the same designated open routes for OHV use as presented in PSPP PA/FEIS Table 4.16-1 (p. 4.16-2) and shown in PSPP PA/FEIS Figure 3.17-1 (p. A-17). OHV use of portions of 4 of the 11 designated routes (approximately 6.4 miles) identified in PSPP PA/FEIS Table 4.16-1 (p. 4.16-2) temporarily would be disrupted by construction of the PSEGS gen-tie line and redundant telecom line; however, users of these established routes could detour onto other routes and/or open washes to access the same locations. After gen-tie-related construction activities were complete, these routes would be open again for public use. The remaining seven designated routes (approximately 7.8 miles) identified in PSPP PA/FEIS Table 4.16-1 would be closed for the life of the PSEGS; however, the closure of only one route (ending in the center of the north boundary of the site) would block direct motorized access to lands that currently are accessible via designated routes. (As reported for the PSPP on page 4.8-10 of the PSPP PA/FEIS, it appears that the area's open washes could continue to provide access to those currently accessible lands. Impacts to wash open zones are discussed below.) After the completion of decommissioning activities, these routes could be reopened for public use. Impacts associated with such closure are described for the PSPP on PSPP PA/FEIS page 4.16-2. The same adverse effects would result from the PSEGS.

OHV Use of Wash Open Zones

The PSEGS would be located in substantially the same location as the PSPP, and so would be located in an area designated in the CDCA Plan as MUC-M, which allows OHV travel in open washes. The primary and secondary washes that transverse the PSEGS site would be closed to OHV users; however, users could detour onto other routes and/or open washes to access the same locations.

Transportation

Construction

Workforce. Construction of the PSEGS would occur during a different time period and would generate a different number of construction worker vehicle trips than was presented and analyzed for the PSPP. Construction-related activities and vehicle traffic associated with construction of the PSEGS are discussed below.

The PSEGS would be completed over an approximately 34-month period, beginning in the fourth quarter of 2013 and concluding by June 2016. Construction activities would be scheduled into two phases, and construction activities would occur from 5:00 a.m. to 3:30 p.m. with a swing shift during heliostat assembly (from 6:00 p.m. to 4:00 a.m.) and during tower construction (which may occur in three shifts around the clock until these tasks are completed). Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., tower construction, foundation pouring, or working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the PSEGS, some activities would continue 24 hours per day, 7 days per week. Such activities may include, but not be limited to, the installation of heliostats and pouring of concrete for power towers.

During construction, the majority of the construction workforce is anticipated to be sourced locally and from the surrounding communities near the PSEGS site. Certain non-local specialty trade workers supporting proprietary plant equipment/components and construction processes may also be employed on a short-term basis during construction. Construction access would be from the primary access road via the I-10 and Corn Springs Road interchange. Materials and equipment would be delivered by truck.

The PSEGS would require approximately 998 daily construction workers (Palen Solar III, LLC, 2013), which equates to about 1,996 one-way vehicle trips per day (assuming each worker would be commuting via private vehicle). Peak construction would be expected to occur during Month 22 (Year 2015) of the 34-month construction period. During this peak month, the workforce is estimated to be about 2,311 workers a day. Assuming the highest impact, conservative scenario for the project, where all workers during the peak construction period commute in their own vehicles, peak construction activities would yield about 4,622 one-way vehicle trips per day.

However, vehicle trips associated with construction activities would not occur simultaneously because such activities would occur in two or three different shifts (as stated above). The average number of day shift workers would be approximately 790, and the peak number of day shift workers would be approximately 1,700 (Palen Solar III, LLC, 2013). The Applicant estimates that approximately 7.5 percent of all day-shift workers would carpool to the project site (see APM TRANS-4 in Appendix C), and so the number of average one-way daily vehicle trips generated would be approximately 1,520 per day, and peak construction period one-way daily vehicle trips generated would be approximately 3,272 per day. However, as stated above, construction activities that would occur during the day should be scheduled to begin at 5:00 a.m. and conclude around 3:30 p.m., which are outside the typical peak commute travel periods (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.), and project-related construction vehicles would not coincide with peak commute travel along I-10 or commute traffic from nearby communities (e.g., Blythe and Desert Center).

Construction worker-related vehicles and construction equipment/machinery would not be located in any public ROW or interfere with users of such facilities. Safety and efficiency concerns require on-site parking and laydown areas. That is, a traffic hazard could occur if workers were to park on public roadways, or if public roadways were used for the staging and laydown of equipment, materials, and supplies. Such a hazard could adversely affect traffic conditions along I-10 as well as the safety of the workers and drivers. Temporary construction parking areas would be provided within the PSEGS site adjacent to the primary construction laydown area and within each power block’s laydown area.

Table 4.16-1a compares projected peak hour traffic volume and LOS on study roadways along I-10 during the Year 2015 without the PSEGS and the Year 2015 with the PSEGS (during peak construction).

TABLE 4.16-1
2015 PEAK HOUR VOLUMES AND LOS ON STUDY ROADWAYS DURING PEAK CONSTRUCTION

Roadway Segment	Construction Year (2015) Volume without Project[a]	LOS	Construction Year (2015) Volume With Project	LOS
I-10: West of the project site	3,070	A	3,888	A
I-10: East of the project site	3,070	A	3,888	A
Corn Springs Road	Negligible	A	1,572	A

NOTE:
[a] Year 2011 traffic volumes were expanded to Year 2015 using the same growth rate of expansion (3.74%/year) as applied in the PSPP Final EIS.

SOURCE: Palen Solar III, LLC, 2012; ESA, 2013.

Based on the findings presented above, and because the temporary increase in traffic associated with construction activities would not degrade LOS conditions along I-10 to an acceptable service level, the PSEGS would not result in an adverse effect to the surrounding roadway network.

Construction Truck Traffic

The PSEGS would be expected to generate the same amount of truck traffic during construction as presented in the PSPP PA/FEIS (i.e., averaging 20 to 30 one-way truck trips per day and peaking at approximately one-way 40 truck trips per day), as presented on page 4.16-4 of the PSPP PA/FEIS. Accordingly, equipment and materials would be transported via trucks to the site on a daily basis, and trucks would utilize I-10 in order to access the site.

As identified in the PSPP PA/FEIS and applicable to the PSEGS, to transport equipment, the Applicant must obtain special ministerial permits from Caltrans to move oversized or overweight materials. Oversized or overweight trucks with unlicensed drivers could be hazardous to the general public and/or damage roadways. These roadways could be damaged due to PSEGS-related construction activities. Therefore, the Applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary.

The activities necessary to construct the gen-tie line for the PSPP (as described and analyzed in the PSPP PA/FEIS) would be the same for the PSEGS even though the PSEGS proposes to shift a segment of the gen-tie line near the western end of the route. The PSEGS-proposed gen-tie line rerouting would minimize crossings over I-10 and ensure easy entry into the Red Bluff Substation nearest the PSEGS's breaker position, which was relocated as part of the Red Bluff final design subsequent to publication of the PSPP PA/FEIS. Figure 2-2 shows the alignment of the proposed gen-tie line. No permanent spur roads would be required to maintain the gen-tie line; however, there would be a maintenance access road along the route. As a result, construction of the gen-tie line would not cause significant impacts to traffic volumes or LOS because it is not expected to occur at the same time as peak construction employment, and the number of construction workers would be low.

Parking Capacity

As stated, construction period parking demands would be accommodated by temporary on-site parking areas within the Project site adjacent to the primary construction laydown area and within each power block's laydown area. The temporary construction laydown area would encompass approximately 28 acres located north of the common facilities area and west of the existing SCE 161 kV transmission line. The temporary construction laydown area has been sized large enough to allow the staging of deliveries and truck and worker ingress and egress to the site to avoid stacking on the I-10 and Corn Springs interchange. Additional construction laydown and temporary use areas would be located near the power block in each plant. As a result, construction worker-related vehicles and construction equipment/machinery would not be located in any public ROW or interfere with users of such facilities. Because designated construction staging/parking areas would be provided and no vehicles would be parked along public ROWs, the PSEGS would not result in any adverse effects to parking during construction.

Operation Impacts

Due to the nature and remote location of the PSEGS, a relatively minor amount of traffic would be generated to and from the site during standard operations. As stated in Section 2.1.5 *Operations and Maintenance*, the PSEGS would require about 100 full-time employees: 30 at Solar Plant 1 (including mirror washing machine operators), 30 at Solar Plant 2 (including mirror washing machine operators), and 40 at the administration complex. The 100 full-time employees would equate to about 250 daily one-way trips; however, the facilities would operate seven days a week, and employee work shifts would be staggered during each day. Therefore the amount of traffic generated during operation would be less than the total daily vehicle trips.

As shown below in Table 4.16-2, the study roadway segments along I-10 would continue to operate at acceptable service levels (LOS A) during project operation; therefore there would be no adverse effect to traffic conditions.

During operations, employees would park on-site in an approximate 34,000 square-foot parking area, which would accommodate about 97 parking spaces, assuming 350 square feet per vehicle is needed. This would adequately accommodate the 100-employee workforce, especially given the fact that employee work shifts would be staggered and not all 100 employees would be parked at the same time. Because the PSEGS would supply an adequate amount of on-site parking, it would not result in any parking spill-over to sensitive areas and would not create any adverse effects related to parking.

TABLE 4.16-2
2016 PEAK HOUR VOLUMES AND LOS ON STUDY ROADWAYS DURING PROJECT OPERATION

Roadway Segment	Construction Year (2016) Volume without Project[a]	LOS	Operation Year (2016) Volume With Project	LOS
I-10: West of the project site	3,184	A	3,234	A
I-10: East of the project site	3,184	A	3,234	A
Corn Springs Road	Negligible	A	125[b]	A

NOTES:
a Year 2011 traffic volumes were expanded to Year 2016 using the same growth rate of expansion (3.74%/year) as applied in the PSPP Final EIS.
b Employee trips include 50 percent of total daily one-way trips (100) x 1.25, to account for miscellaneous midday trips. This is the assumed maximum one-way trips during the peak hour.

SOURCE: Palen Solar III, LLC, 2012; ESA, 2013.

4.16.3 Cumulative Impacts

PSEGS

Public Access

Open routes are inventoried in the CDCA and NECO Plans. Any renewable energy project or other action identified in Table 4.1-1 that precludes or prevents access (temporarily or permanently) to an open route could cause or contribute to adverse effects on OHV use, including rerouting, use restrictions, and closures. Additional details will be provided regarding whether any of the other projects in the cumulative scenario will affect the open routes that could be affected by construction or operation of the PSEGS when that information is available. Any PSEGS-related adverse cumulative effects would cease upon decommissioning, when the affected routes would be restored for OHV use.

Transportation

The potential for cumulative transportation impacts exists where there are multiple projects proposed in an area that have overlapping construction schedule and/or project operations that could affect similar resources. Projects with overlapping construction schedules and/or operations could result in a substantial contribution to increased traffic levels throughout the surrounding roadway network.

For purposes of the analysis, the geographic scope for cumulative transportation impacts includes projects that have been constructed; or are currently under construction, planned, or approved within a two-hour drive of the PSEGS; and in particular, at the same affected roadway segments as the PSEGS (e.g., within the I-10 corridor). As shown in Table 4.1-6, currently more than a dozen existing cumulatively considerable projects along the I-10 corridor.

In addition, shown in Table 4.1-7, there are approximately 18 solar projects proposed or under construction along the I-10 corridor, predominantly between Desert Center and Blythe. Based on the currently available data for these various projects (information obtained from Plans of Development and other project documents), and assuming all projects move forward, these projects could be constructed in the same general timeframe as the PSEGS, or have the potential to overlap for at least a portion of the construction period.

The cumulative analysis conservatively assumes that the construction of all of the proposed solar projects would be under construction within the 34-month cumulative timeframe for construction-related impacts of the PSEGS. This cumulative impacts discussion is based on available data with respect to both construction schedules and workforce and the PSEGS's construction schedule and workforce as they relate to transportation and traffic. If construction and operating labor requirements are not known for some projects, average work force levels of other comparable projects and professional judgments have been used to develop conservative estimates of expected cumulative traffic associated with these projects.

Past development near the Project area includes those projects listed in Table 4.1-6. All of the projects listed in Table 4.1-6 have been implemented and so would contribute ongoing operational traffic to area roadways during the Project's construction, operation and maintenance, and decommissioning phases. Traffic associated with these past projects already contributes to existing traffic on the road network and, therefore, is accounted for as part of baseline conditions for the Project evaluated in Section 4.16.2, *Direct and Indirect Impacts*.

Table 4.1-7 provides a list of reasonably foreseeable projects, including other proposed or approved renewable energy projects, various BLM-authorized actions/activities, proposed or approved projects within the County's jurisdiction, and other actions/activities considered reasonably foreseeable. As such, Projects A through AD (as labeled in Table 4.1-7) have the potential to affect the local road network and all of these projects listed in Table 4.1-7 would generate traffic along the I-10 corridor.

Construction

Cumulative impacts would be greatest if the peak construction period of all of these projects overlapped. Although this worst-case scenario is unlikely, even if it were to occur, it is unlikely that the LOS of the affected freeway segments would degrade to unacceptable service levels of LOS D or worse, which is the allowable limit in the Riverside County General Plan (Riverside County, 2009). This is based upon the fact that segments of I-10 near the Project site currently operate at LOS A. Additionally, as stated, Project-generated traffic during any phase would not be substantial enough to degrade freeway LOS to unacceptable conditions.

Cumulative impacts to segments of I-10 have been considered because it is likely that construction vehicle trips from foreseeable future projects and Project would have the greatest potential to combine cumulatively on I-10. It is likely that a portion of construction traffic, including worker and haul trucks, for all projects listed in Table 4.7-1 would traverse the same portion of I-10 as Project construction-related traffic. For example, the Desert Sunlight would require an average of 450 workers per day and a peak of up to 570 workers per day during construction. Similarly, the McCoy Solar Energy Project would require an average of approximately 341 workers per day and up to 750 during peak construction. Based on these findings and assuming that workers would drive alone to their respective project site, these two future projects would result in over 800 daily worker trips (1,600 one-way trips) along I-10. Further, with implementation of the PSEGS and its workforce (average of 998 workers and a peak of up to 2,311 workers per day), combined with the Desert Sunlight and McCoy projects would yield up to 3,111 additional trips along I-10 during their construction periods, respectively.

As stated, the above discussion describes a worst-case scenario, in which construction peak periods would overlap for all projects proposed in the Project area. Based on these findings and the substantial increase in traffic associated with PSEGS and other planned projects, the LOS of I-10 could be temporarily degraded, but likely would not be degraded below the acceptable LOS C, and would not result in any permanent LOS degradation. Levels of congestion (delay) at on- and off-ramps along I-10 could be adversely affected due to the temporary influx of construction-related traffic; however, even a worst-case scenario would not likely exceed the capacity of I-10, which in this area has two lanes in both directions to accommodate the anticipated increase in traffic while maintaining adequate traffic flow along the freeway mainline.

Implementation of APM TRANS-4, described more fully in Appendix C, would reduce the Project's construction-related contribution to cumulative traffic impacts. Based on the short-term nature of construction, any increase in vehicle trips and transportation-related impacts would be temporary. However, even with implementation of APM TRANS-4 and other related APMs during construction of the Project, implementation of a coordinated transportation management plan is recommended to reduce the Project's contribution to any potential traffic impacts to the surrounding network. Implementation of **Mitigation Measure TRN-1** would reduce potential cumulative traffic impacts. Lastly, it is noted that other planned projects that would affect the I-10 corridor would have established traffic control plans in order to reduce and/or avoid potential adverse traffic effects along I-10 and to ensure that established LOS standards along the freeway are not exceeded.

Operation and Maintenance

Project operation and maintenance is estimated to generate a total of about 100 daily trips, which would equate to about 250 daily one-way trips; however, the facilities would operate seven days a week, and employee work shifts would be staggered during each day. Therefore the amount of traffic generated during operation would be less than the total daily vehicle trips. In addition, because operation and maintenance of the PSEGS would generate substantially less traffic than construction or decommissioning activities, and because the construction phase of the Project would cause no adverse traffic impacts (as stated above), no adverse cumulative impacts would occur due to the traffic generated during the operation and maintenance phase of the Project.

Decommissioning

During the closure and decommissioning of the Project, it is unknown what would be the potential cumulative contribution of the Project to transportation and traffic impacts, as the number and proximity of cumulative projects in 30 to 50 years (expected life of the PSEGS) is unknown. It is assumed that the analysis of cumulative construction impacts discussed above could occur during decommissioning, and that APMs and mitigation measures implemented during construction activities also would be applicable to decommissioning activities.

Reconfigured Alternative 2

Option 1

During construction, operation, maintenance, and decommissioning, the workforce required for Option 1 is anticipated to be very similar to the PSEGS as described above. Therefore, the cumulative impact analysis for Option 1 is expected to be the same as for the PSEGS.

Option 2

During construction, operation, maintenance, and decommissioning, the anticipated workforce required for Option 2 is anticipated to be very similar to the PSEGS as described above. Therefore, the cumulative impact analysis for Option 2 is expected to be the same as for the PSEGS.

No Action Alternative A

If No Action Alternative A was selected, the PSEGS would not occur at the project site. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project. However, insufficient information currently is known about the transportation and traffic-related specifics of any such future project to allow for a meaningful analysis.

4.16.4 Summary of Mitigation Measures

The Applicant proposed a series of APMs to reduce or avoid any potential transportation and traffic impacts that could result from the PSEGS. These APMs were derived from the PSPP PA/FEIS (see Appendix C). In addition to these APMs, the following mitigation measure would be required to reduce any potential cumulative impact to traffic conditions along the I-10 corridor.

TRN-1: Prior to construction, the Applicant shall develop a Coordinated Transportation Management Plan and work with the BLM and Riverside County to prepare and implement a transportation management plan for roadways adjacent to and directly affected by the planned Project facilities, and to address the transportation impact of the multiple overlapping construction projects within the vicinity of the Project in the region. The transportation management plan shall include, but not be limited to, the following requirements:

1. Coordination of individual traffic control plans for Project and nearby projects.

2. Coordination between the contractor and Riverside County in developing circulation and detour plans that include safety features (e.g., signage and flaggers). The circulation and detour plans shall address:

    a. Full and partial roadways closures;

    b. Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control devices;

    c. Bicycle detour plans, where applicable;

    d. Parking along arterial and local roadways; and

    e. Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites.

3. Protocols for updating the transportation management plan to account for delays or changes in the schedules of individual projects.

4.16.5 Residual Impacts after Mitigation Measures were Implemented

Public Access

There would be no residual impacts related to public access.

Transportation

Level of service within the vicinity of the PSEGS would operate under acceptable conditions (LOS A) during project construction.

4.16.6 Unavoidable Adverse Impacts

Public Access

Navigable washes and OHV routes would be transected by the PSEGS which would result in closure to OHV users.

Transportation

There would be no unavoidable adverse impacts related to transportation.

4.17 Impacts on Vegetation Resources

4.17.1 Impact Assessment Methodology

The vegetation resources impact assessment methodology described in PSPP PA/FEIS Section 4-17.1 (p. 4.17-1) was used to analyze the PSEGS in this Draft SEIS. Incorporated into this analysis are revised impact acreages (Palen Solar Holdings, LLC, 2013) and the results of biological surveys of the gen-tie line reroute, natural gas pipeline extension, and distribution yard (Karl, 2013a). The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.17.2 (p. 4.17-19 through 4.17-22). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.17.3, below).

4.17.2 Direct and Indirect Impacts of the PSEGS

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 also result from project activities, but can occur later in time and/or at more distant locations and are still reasonably foreseeable. The potential impacts discussed in this analysis are those most likely to be associated with construction and operation of the PSEGS.

As described in the PSPP PA/FEIS, impact analyses typically characterize effects to plant communities as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-project state. In the desert ecosystems the definition of “permanent” and “temporary” must reflect the slow recovery rates of its plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (PSPP PA/FEIS, p. 4.17-2), but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery may require over 3,000 years (PSPP PA/FEIS, p. 4.17-2). Consequently, due to the slow recovery rates of plant communities in desert ecosystems, impacts of the PSEGS 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 5 years.

Impacts to Upland Vegetation Communities

Direct and indirect impacts to natural vegetation communities resulting from the PSEGS are presented in Table 4.17-1. The total project footprint, or Project Disturbance Area, is 3,898.96 acres. Impacts associated with approximately 99 percent of this area is evaluated in the PSPP PA/FEIS. Indirect effects of the PSEGS on areas beyond the project site, namely those that would occur within the SCE 161 kV Eagle Mountain-Blythe power line corridor and on adjacent private property (~ 51.4 acres), were also analyzed in the PA/FEIS.

TABLE 4.17-1
DIRECT AND INDIRECT EFFECTS ON NATURAL COMMUNITIES/COVER TYPES

Natural Communities and Cover Types in the PSEGS Vicinity[a]	Disturbance Area	One Mile Buffer Area[b]	Resources Study Area
Ephemeral Drainages "Riparian"			
Desert dry wash woodland	206.4	0.03	206.43
Unvegetated ephemeral dry wash	168.16	0.51	168.67
Total Ephemeral Drainages "Riparian"	***374.56***	***0.54***	375.10
Upland			
Active desert dunes	0	0.00	0.00
Desert sink scrub	0	0.00	0.00
Dry lake bed	0	0.00	0.00
Sonoran creosote bush scrub	3,335.16	50.86	3,386.02
Stabilized and partially stabilized desert dunes (permitted)	186.90	0.00	186.90
Total Upland	***3522.06***	50.86	3572.92
Other Cover Types			
Agricultural Land	0	*0.00*	0.00
Developed	2.34	*0.00*	2.34
Total Other Cover Types	***2.34***	***0***	***2.34***
Total Acres	**3,898.96**	**51.40**	3950.36

NOTES:

[a] The Project Disturbance Area encompasses the disturbance resulting from the proposed construction of the PSEGS, including solar fields, transmission facilities, office and maintenance buildings, lay down area, leach fields, and other components. It includes the impact acreage of the gen-tie line and the natural gas line corridor and switch yard (3.53 acres).

[b] Indirect effects occurring within the buffer area generally are limited to the 161 kV Eagle Mountain-Blythe power line corridor and on adjacent private property.

SOURCE: Galati, 2013.

Areas previously unsurveyed for the PSPP that are associated with the PSEGS include the gen-tie line reroute (18.9 acres), natural gas pipeline extension (3.3 acres) and distribution yard (0.23 acres), for which vegetation resources were characterized in spring 2013 (Karl, 2013a). The 18.9 acre area associated with the gen-tie line reroute has, however, been surveyed as part of the Desert Sunlight Solar Project. Totaling 22.43 acres of new disturbance, these areas collectively comprise 1.0 percent of the total project footprint. As no additional vegetation communities or special-status plants were identified in new areas, with incorporation of new impact acreages the PSPP PA/FEIS method for analyzing impacts to vegetation resources remains valid for the Draft SEIS.

Sonoran Creosote Bush Scrub

As described in PSPP PA/FEIS Section 4.17.2 (p. 4.17-2), direct impacts of the PSPP to creosote bush scrub would include the permanent loss of, and fragmentation of, adjacent wildlife habitat and native plant communities, including ecological services such as wildlife cover, forage, microhabitat for other plants, and erosion protection. An estimated 3,386.02 acres of Sonoran creosote bush scrub would be impacted by the PSEGS (Karl, 2013b). Direct impacts would total 3,335.16 and indirect impacts would total 50.86 acres. The PSEGS would maintain surface contours and allow vegetation under 12 inches in height to persist over the life of the project. This could minimize fragmentation of some plant communities by preserving root structures in the soil and providing for some plant microhabitats to continue, while protecting the site from erosion.

Stabilized and Partially Stabilized Dunes

As described in PSPP PA/FEIS Section 4.17.2 (p. 4.17-2), direct impacts of the PSPP to stabilized and partially stabilized dunes include permanent loss of habitat as well as potential accidental direct impacts to adjacent preserved habitat during construction and operation. Indirect impacts include disruption of sand transport corridor resulting in downwind impacts to sand dune habitat; introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; fragmentation and degradation of remaining habitat. These impacts would likely be lessened under the PSEGS, because the reduction in grading would minimize the opportunity for invasive plants to colonize and would reduce the potential for erosion and sedimentation on the site. An estimated 186.9 acres of stabilized and partially stabilized dunes habitat would be directly impacted along the northeastern boundary of the site fenced area (Galati, 2013). The PSEGS configuration eliminates the construction of 30-foot high wind fences that were proposed under the PSPP, and this would allow sand transport to continue in the corridor and, thereby, minimize indirect effects.

Ephemeral Washes and Sensitive Plant Communities

PSPP PA/FEIS Section 4.17.2 (p. 4.17-3 et seq.) describes grading that would have occurred within the PSPP disturbance area and its ephemeral drainages, resulting in a direct impact on these communities and eliminating the hydrological, biogeochemical, vegetation and wildlife functions of these drainages. Desert washes downstream from the project area also would be subject to an indirect impact as a result of changes to upstream hydrology, with downstream vegetation in washes deprived of flows or receiving lower or higher volumes and velocities of water than current conditions at discharge points along the stormwater conveyance channel. Diversions could greatly alter the hydrology and wash-dependent vegetation of any features that may occur downstream of the project area.

In response to these concerns and to minimize impacts on ephemeral washes and associated plant communities, the PSEGS decreases the intensity of grading and drainage control by reducing total grading from 4.5 million cubic yards of cut and fill to 200,000 cubic yards (0.2 million cubic yards) (Palen Solar III, LLC., 2013). Much of the PSPP grading would have occurred across the solar field where ephemeral washes and the sensitive plant communities they support are prevalent, but much less grading of the solar field would occur under the PSEGS. Grading still would occur in the following areas: power towers and blocks, switchyard, administration complex area, heliostat assembly buildings, and certain access roads. Grading and road surfacing (e.g., graveling or paving) would be required to construct “spoke” roads from the power block to the outer edge of the solar field. At some washes, limited grading may be required to allow the heliostat installation equipment and mirror washing machines access to the solar fields, and surface rocks and boulders would need to be relocated to allow proper installation of heliostats and facilities where they cannot be avoided (Palen Solar III, LLC., 2013).

For the PSEGS, the solar field and "ring" roads in the solar field would not be bladed or graded except where the height of existing localized vegetation precludes installation of any specific heliostat (Palen Solar III, LLC., 2013). Plant root structures, the soil surface, and natural land contours would be maintained to preserve surface drainage patterns and storm runoff. During PSEGS construction and operation, vegetation in the solar field would be mowed to a height of 12 to 18 inches.

PSEGS impacts to ephemeral washes and their associated sensitive vegetation communities would total 375.10 acres (Karl, 2013b) with 98 percent of the impact occurring within the site's fenced area. Direct impacts to Desert Dry Wash Woodland would total 206.4 acres, while indirect impacts to Desert Dry Wash Woodland would total 0.03 acre. Direct impacts to Unvegetated Ephemeral Dry Wash would total 168.16 acres, while indirect impacts to Unvegetated Ephemeral Dry Wash would total 0.51 acres.

Impacts to Groundwater-Dependent Vegetation

PSPP PA/FEIS Section 4.17.2 (p. 4.17-4 et seq.) explain that the effects of groundwater pumping may take several-to-many years to appear, depending on the degree of separation in the confining layers between the shallow aquifer (supporting plants) and deep aquifers (where pumping would occur). Groundwater levels near the PSPP's water supply wells would decline during project pumping. Compared to the PSPP, the PSEGS would reduce, but not eliminate impacts to groundwater-dependent vegetation by reducing water use over the life of the project by 50 percent from 14,750 AF to 7,160 AF. This would be accomplished by reducing water use during facility operations by 33 percent from 300 AFY to 201 AFY, and by reducing water use during construction by 80 percent from 5,750 acre feet to 1,130 acre feet (Palen Solar III, LLC., 2013).

Use of Groundwater by Phreatophytes

Within the PSPP's 2- to 3-mile radius groundwater drawdown zone, the groundwater dependent ecosystems (GDEs) are dominated or defined by "phreatophytes". Groundwater pumping could have a substantial impact to vegetation resources if it lowers the water table in areas where deep-rooted phreatophytes occur. As described in PSPP PA/FEIS Section 4.17.2 (p. 4.17-5), phreatophytes have deep roots that extend down to, and extract water from a periodically stable water supply, including the capillary fringe (i.e., the zone just above the water table that is not completely saturated, where water is lifted up by capillary action, or surface tension) (PSPP PA/FEIS, p. 4.17-5). Even though the groundwater may never be visible at the ground surface as it is in a wetland or spring, phreatophytic ecosystems can still be groundwater-dependent (PSPP PA/FEIS, p. 4.17-5).

Response to Water Stress

As described in PSPP PA/FEIS Section 4.17.2 (p. 4.17-5), a plant's response to water stress can be manifest as anything from diminished physiological processes to plant death. The response of these GDEs to change in these attributes is variable (PSPP PA/FEIS, p. 4.17-5), and there is insufficient scientific information available to assess the project's short-term construction-related impacts and long-term residual operational impacts on GDEs.

Impacts to Springs

As described in PSPP PA/FEIS Section 4.17.2 (p, 4.17-7), the PSPP site is located within the Chuckwalla Valley Groundwater Basin, which supports four surface water sites (e.g., seeps and springs): Corn Spring Wash and two others located in the Chuckwalla Mountains southwest of the Project; and Coxcomb Wash, located eight miles north of the Project. The McCoy Mountains support a fifth surface water location known as McCoy Spring, located 15 miles northeast of the Project. Springs may be considered surface extensions of the local groundwater system or may be associated with base flow discharge or perched aquifers that are part of a separate groundwater flow system originating from surrounding mountains and having no direct hydraulic connection to the basin aquifer system. Impacts to springs associated with the PSEGS are the same as those described in PSPP PA/FEIS Section 4.17.2 (p. 4.17-7), which found that the PSPP could have an impact on McCoy Spring only if groundwater levels were reduced by many feet, and that project impacts were unlikely. No new springs were identified during surveys of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013b).

Noxious and Invasive Weeds

As described in PSPP PA/FEIS Section 4.17.2 (p. 4.17-8), construction activities and soil disturbance could introduce new noxious weeds to lands adjacent to the proposed solar plant site and its linear facilities, and could further spread weeds already present in the project vicinity. The spread of invasive plants is a major threat to vegetation resources in the Colorado Desert because non-native plants can displace native plants, increase the threat of wildfire, and supplant wildlife foods that are important to herbivorous species. Tamarisk, Russian thistle, Sahara mustard, and Mediterranean grass are already present in the Project area and are expected to increase as a result of construction- and operation-related disturbance. The fact that the Applicant intends to mow the solar field instead of remove vegetation could reduce the risk that construction- and operation-related disturbance would cause the spread of these species.

Special Status Plants

Harwood's Woolly-star

As described in the PSPP PA/FEIS for Reconfigured Alternative 2 (p. 4.17-19 et seq.), which is similar to the PSEGS configuration, a total of 169 Harwood's woolly-star plants were observed in dunes east of the Project and none occurred within the Project Disturbance Area. No Harwood's woolly stars were observed in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a). Based on these results, the PSERGS Project is expected to cause no direct or indirect impacts to Harwood's woolly-star from hydrologic changes downstream. Concerns about the potential for the spread of Sahara mustard into dunes east of the PSEGS from construction-related disturbance and transport of seeds on vehicles during construction and operation are described and addressed in this section under *Noxious and Invasive Weeds*. It is unknown but likely that the significantly reduced grading activities under the PSEGS would lessen impacts on Harwood's woolly stars relative to the PSPP as proposed by preserving the seed bank and, if unaffected by mowing activities, allowing plants to flower and reproduce through pollination.

Harwood's Milkvetch

Spring 2010 surveys identified seven Harwood's milkvetch individuals in the Project Disturbance Area (PSPP PA/FEIS, p. 4.17-9 et seq.) out of a total population of ± 146 plants in the BRSA. The local Harwood's population size likely expands and contracts with the normal wide variations in annual rainfall. Harwood's milkvetch plants also are found in dune habitat east of the PSPP site. No plants were observed in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a). PSEGS construction would result in the loss of some Harwood's milkvetch individuals, a direct impact, and plants could be indirectly affected through changes in surface drainage patterns and sediment transport. It is unknown but likely that the significantly reduced grading activities under the PSEGS would lessen impacts on Harwood's milkvetch by preserving the seed bank and, if unaffected by mowing activities, allowing plants to flower and reproduce through pollination.

Ribbed Cryptantha

An estimated 3.6 million ribbed cryptantha plants were observed in the Project Disturbance Area for the PSPP (PSPP PA/FEIS, p. 4.17-10). No plants were observed in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a).

The PSPP PA/FEIS found that large occurrences totaling over 100,000 plants have been found in the disturbance areas for the Genesis and Blythe solar projects (PSPP PA/FEIS, p. 4.17-10). The PSPP PA/FEIS determined that the direct impacts of the PSPP to this species were not substantial given the large number of ribbed cryptantha plants detected by all the I-10 projects within and outside of their project disturbance areas, the likeliness of ribbed cryptantha to occur in similar habitats nearby, and its apparently stable range in California. It is unknown but likely that the significantly reduced grading activities under the PSEGS would lessen impacts on ribbed cryptantha by preserving the seed bank and, if unaffected by mowing activities, allowing plants to flower and reproduce through pollination.

California Ditaxis

As described in the PSPP PA/FEIS (p. 4.17-10), 11 California ditaxis plants were observed within the Project Disturbance Area along the original gen-tie line corridor and another 11 plants were observed in the survey buffer area. Half of the onsite population would be directly impacted by PSPP activities and, as of 2010, there were no other documented occurrences of the species in Chuckwalla Valley east of Desert Center. No plants were observed in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a). The PSPP PA/FEIS (p. 4.17-10) found that without mitigation the direct project impacts combined with indirect impacts resulting from noxious weed invasion would combine to result in a substantial impact to this species. It is unknown but likely that the significantly reduced grading activities under the PSEGS would lessen impacts on California ditaxis by preserving the seed bank and, if unaffected by mowing activities, allowing plants to flower and reproduce through pollination.

"Palen Lake Atriplex" (*Atriplex* sp. nov.)

The PSPP PA/FEIS found that none of the potentially new taxon of saltbush (in the genus *Atriplex*) discovered on the saline playa margins of Palen Dry Lake in 2009 would be directly affected by the PSPP; however, some of the 920 plants documented in the buffer near the northeastern boundary could be indirectly affected by groundwater drawdown (PSPP PA/FEIS, p. 4.17-10). No plants were observed in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a). The PSEGS would reduce the amount of groundwater used during project construction and operation, which would result in an unquantifiable but qualitative reduction in potential impacts on "Palen Lake Atriplex."

Utah Milkvine

As described in the PSPP PA/FEIS (p. 4.17-11), one population of Utah milkvine was found east of the PSPP site, well beyond the Project Disturbance Area. The PSPP PA/FEIS determined that no direct or indirect impacts would occur to this species. Because no additional plants were observed in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013a), this Draft SEIS concludes that no direct or indirect impacts would occur to this species from the PSEGS.

Impacts to Summer-Fall Special-Status Plants

As described in the PSPP PA/FEIS (p. 4.17-11 et seq.), summer-fall special-status plants are (1) annuals whose growth period is triggered by warm summer rains of subtropical origin (typically minimum 10 mm rain events), and (2) perennials that bloom regardless of the summer rain, and are triggered instead by the appearance of cooler storms that originate in the Pacific northwest. Special-status summer annuals documented to occur in the California Sonoran Desert region include Abram's spurge, flat-seeded spurge, and lobed ground cherry. Glandular ditaxis and California ditaxis are also late-season perennials, but their blooming period overlaps the spring season and/or they can be identified vegetatively and do not require flowers or fruit for identification. As described in Section 3.18, Abram's spurge's Heritage Program (HP) State (S) ranking was downgraded from an S1 to an S2S3 based on the discovery and documentation of new California populations, flat-seeded spurge's HP S ranking was shifted from S1.2 to S1, lobed ground cherry's status was downgraded from S1.2 to S2, glandular ditaxis' status upgraded from S1S2 to S1, and California ditaxis' status shifted from S2.2 to S2.

No Abram's spurge, flat-seeded spurge, lobed ground cherry, or glandular ditaxis plants were detected during late-season surveys in 2010 in the PSPP BRSA. As noted above, 11 California ditaxis plants were found within the Project Disturbance Area for the PSPP during 2010 surveys. Late-season surveys have not been conducted in the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute. As described above for California ditaxis, if these species were present then impacts to them could be considered significant given their rarity as indicated by HP S statuses ranging from Imperiled to Critically Imperiled. Within the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute, these species are unlikely to benefit from reduced grading activities.

Indirect Impacts to Special-Status Plants

As described in the PSPP PA/FEIS (p. 4.17-12 et seq.), the following indirect impacts to special-status plants (i.e., impacts outside the direct Project Disturbance Area or that occur following construction) were considered: introduction and spread of invasive plants; population fragmentation and disruption of gene flow; potential impacts to pollinators; alteration of the surface hydrology and basic geomorphic processes that support rare plants and their habitat (e.g., disrupted aeolian and fluvial sand transport processes from obstructions and diversions; erosion and sedimentation of disturbed soils which render the habitat vulnerable to invasion by pest plants; disturbance of the structure and ecological functioning of biological soil crusts which affects seed germination, reduces soil nutrition and carbon sequestration, and renders the soil vulnerable to water and wind erosion (PSPP PA/FEIS, p. 4.17-13); herbicide and other chemical drift; and disruption of photosynthesis and other metabolic processes from fugitive dust during construction and operation of the PSEGS.

Impacts for the PSEGS would be the same as described in the PSPP PA/FEIS, with the exception of alteration of the surface hydrology and basic geomorphic processes that support rare plants and their habitat. These impacts would be reduced under the PSEGS because it would involve a reduction in surface grading from 4.5 million cubic yards of cut and fill to 200,000 cubic yards and eliminate 30-foot-tall wind fences that would have contributed to disruption of the sand transport corridor.

Cacti, Yucca, and Native Trees

As described in the PSPP PA/FEIS (p. 4.17-14), teddybear, silver cholla, pencil cholla, common fishhook cactus, and possibly one cottontop cactus would be lost or salvaged from disturbed areas. These species provide microhabitats for other plants including special-status species, so those values would also be lost. Native trees such as smoke tree, honey mesquite ironwood, blue paloverde, and ocotillo would also be lost from the Project Disturbance Area for the PSPP. These plants provide similar microhabitat values for other plants including special-status species and provide perching and nesting sites for wildlife. These values also would be lost within the Project Disturbance Area for the PSEGS. Due to their size, it is presumed that these species would need to be removed and, therefore, are unlikely to benefit from the PSEGS's reduced grading plan.

Impacts Specific to Closure and Decommissioning of the Proposed Project

As described in the PSPP PA/FEIS (p. 4.17-14 et seq.), potential impacts to vegetation resources from closure and decommissioning of the PSPP would involve residual disturbance of developed areas and potentially altered hydrologic conditions, as well as similar impacts from worker vehicle and equipment access during decommissioning.

4.17.3 Cumulative Impacts

PSEGS

Cumulative impacts to vegetation resources were analyzed in detail in PSPP PA/FEIS Section 4.17.3 (p. 4.17-22 et seq.; see also PSPP PA/FEIS Appendix I). Past, present, and reasonably foreseeable probable future projects were identified for the assessment of potential cumulative impacts. The cumulative scenario has been revised to reflect changes in project status since publication of the PSPP PA/FEIS. The revised cumulative scenario is described in Section 4.1 of this Draft SEIS.

The PSPP PA/FEIS analyzed cumulative impacts on Sonoran creosote bush scrub, desert dry wash woodland, sand dunes and transport corridors, groundwater-dependent ecosystems, waters of the state, noxious and invasive weeds, special-status plants, and carbon sequestration resulting from implementation of the PSEGS and alternatives, relative to the resources present within the entire NECO planning area. The methodology used for this analysis in the PSPP PA/FEIS remains applicable for the PSEGS and has not been supplemented for this document. However, because the disturbance area of the PSEGS is different from that of the PSPP, its cumulative contribution of effects is also different. Similarly, the cumulative scenario presented in the PSPP PA/FEIS has changed since publication of the PSPP PA/FEIS as some projects have been completed or abandoned, and new projects have been proposed. This discussion of cumulative impacts has been revised, based upon available data, to reflect these changes. Consideration for carbon sequestration is addressed in Section 4.3, *Impacts on Global Climate Change.*

Table 4.17-2 summarizes the cumulative effects of existing and reasonably foreseeable projects, in combination with those of the PSEGS, on native vegetation communities within the Cumulative Study Area. As the table illustrates, proposed projects would displace 228,363 acres (5.96 percent) of Sonoran creosote bush scrub within the cumulative study area. If developed, the PSEGS would be responsible for 1.4 percent of the cumulative loss. Among riparian areas, proposed projects would impact 48,167 acres (7.06 percent) of desert dry wash woodlands and 18,634 acres (21.15 percent) of unvegetated ephemeral dry washes. The PSEGS, if developed, would account .043 percent and 0.90 percent of impacts to those features, respectively. Cumulative loss of sand dune communities would total 175 acres (0.28 percent). If implemented, the PSEGS would account for 52 percent of the foreseeable cumulative impacts to these communities. Described more fully in Appendix C, the applicant has proposed to reduce these impacts through compensatory mitigation at ratios established by the CEC in its Conditions of Certification for the PSPP (see APMs BIO-7, BIO-8, and BIO-29),

As discussed in the PSPP PA/FEIS soil disturbance and habitat fragmentation resulting from these projects would create conditions favorable for the establishment and spread of non-native and invasive plants. Sahara mustard, for example, is already present at the site. Other species may be introduced thorough the use of construction equipment, wind, birds, and other means. The applicant proposes the development of a weed management plan to control the introduction and spread of invasive species at the site (see APM BIO-14 in Appendix C).

TABLE 4.17-2
SUMMARY OF CUMULATIVE IMPACTS ON NATIVE VEGETATION COMMUNITIES (acres)

Vegetation Community[a]	Total Vegetation Communities in the Cumulative Study Area[a]	Impacts to Vegetation Community from Existing Projects (Percent of vegetation Community in Cumulative Study Area)	Impacts to Vegetation Community from Foreseeable Future Projects (Percent of Vegetation Community in Cumulative Study Area)	Contribution of PSEGS to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)	Contribution of Reconfigured Alternative 2 (Option 1) to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)	Contribution of Alternative 2 (Option 2) to Future Cumulative Impacts (Percent of Total Impacts from Future Projects)
Sonoran Creosote Bush Scrub	3,829,999	22,815 (0.6%)	228,363 (5.96%)	3,386.02 (1.46%)	3,817 (1.64%)	3,771 (1.62%)
Desert Dry Wash Woodland	682,027	8,457 (1.24%)	48,167 (7.06%)	206.43 (0.43%)	208 (0.43%)	198 (0.41%)
Ephemeral Wash/Playa/Dry Lake	88,110	961 (1.09%)	18,634 (21.15%)	169 (0.90%)	199 (1.06%)	186 (0.99%)
Sand Dunes	62,140	14 (0.02%)	175 (0.28%)	186.9 (51.64%)	156 (47.13%)	188 (51.79%)
Agriculture, Developed	94,187	n/a	1,017 (1.08%)	0 (<0.01%)	3 (0.29%)	3 (0.29%)

NOTES:

[a] Based on the BLM NECO Plant Communities dataset (BLM CDD 2002)conducted by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division UC Santa Barbara GAP Analysis (1996, cited in CEC SA/DEIS, 2010), updated during the NECO planning effort (see Appendix H of the NECO (BLM and CDD 2002)

Cumulative effects associated with groundwater-dependent ecosystems would be similar to those discussed for the PSPP in the PA/FEIS. Implementation of all cumulatively considerable projects would place the Chuckwalla Valley Groundwater Basin into overdraft conditions. However, the PSEGS' contribution (201 acre-feet per year) to this cumulative effect is not considerable. APMs Soil&Water-3, Soil&Water-5, and BIO-23 would ensure groundwater-dependent vegetation within 2 to 3 miles of the project would not be adversely affected for the life of the project. Similarly, BIO-24 provides for the development and implementation of a remedial action plan if negative effects on such vegetation are detected.

Described above, several special status plant species have the potential to occur within the PSEGS site. Habitats for these species also extend throughout the Cumulative Study Area. Ground disturbance associated with the cumulatively considerable projects could have a substantial effect on these species. Due to the limited number of occurrence records in this region, and because desert rare plants often have specific microhabitat or germination requirements that are poorly understood, a reliable accounting of the extent of these impacts, or the cumulative contribution of the PSEGS, is not practicable. Outlined in Appendix C, the Applicant has proposed several measures to minimize and compensate for impacts to rare plants attributable to the PSEGS (see APMs BIO-7, BIO-8, and BIO-19).

Reconfigured Alternative 2

Reconfigured Alternative 2 includes two possible layouts referred to as Option 1 and Option 2. Both options would rely on solar trough technology, rather than the PSEGS proposed solar power tower technology. Significant grading and hydrologic engineering would occur under Reconfigured Alternative 2 that is not part of the PSEGS. Grading would fully remove vegetation from the site (rather than mowing of existing vegetation as proposed under the PSEGS). The impacts of Reconfigured Alternative 2 (Options 1 and 2) are analyzed in the PSPP PA/FEIS. That analysis remains valid and is not supplemented here. However, as the cumulative scenario has changed, the cumulative effects analysis for this alternative has been revised, as discussed below.

Option 1

The impacts described in the PSPP PA/FEIS for Reconfigured Alternative 2 Option 1 have not changed since publication. Option 1 would disturb approximately 4,366 acres, consisting of 3,817 acres of Sonoran creosote bush scrub, 156 acres of stabilized and partially-stabilized desert dunes, 208 acres of desert dry wash woodland, and 180 acres of unvegetated ephemeral dry wash. Table 4.17-2 summarizes the cumulative effects of reasonably foreseeable projects, in combination with those of the Reconfigured Alternative 2 (Option 1), on native vegetation communities within the Cumulative Study Area.

Noted above, proposed projects would displace 3,817 acres (0.10 percent) of Sonoran creosote bush scrub within the cumulative study area. If developed, the Reconfigured Alternative 2 (Option 1) would be responsible for 1.64 percent of the cumulative loss. Among riparian areas, proposed projects would impact 48,167 acres (7.06 percent) of desert dry wash woodlands and 18,634 acres (21.15 percent) of unvegetated ephemeral dry washes. The Reconfigured Alternative 2 (Option 1) would account .043 percent and 1.06 percent of impacts to those features, respectively. If developed, Reconfigured Alternative 2 (Option 1) would account for nearly 47 percent of impacts to that community type. The cumulative effect of the Reconfigured Alternative 2 (Option 1), in combination with other cumulatively considerable projects in the Study Area, on groundwater-dependent vegetation, invasive weeds, and rare plant species would be similar to that described above for the PSEGS.

Option 2

The impacts described in the PSPP PA/FEIS for Reconfigured Alternative 2 Option 2 have not changed since publication. Option 2 would disturb approximately 4,330 acres, consisting of 3,771 acres of Sonoran creosote bush scrub, 188 acres of stabilized and partially-stabilized desert dunes, 198 acres of desert dry wash woodland, and 168 acres of unvegetated ephemeral dry wash. Table 4.17-2 summarizes the cumulative effects of reasonably foreseeable projects, in combination with those of the Reconfigured Alternative 2 (Option 2), on native vegetation communities within the Cumulative Study Area.

Noted above, proposed projects would displace 3,817 acres (0.10 percent) of Sonoran creosote bush scrub within the cumulative study area. If implemented, the Reconfigured Alternative 2 (Option 2) would be responsible for 1.62 percent of the cumulative loss. Among riparian areas, proposed projects would impact 48,167 acres (7.06 percent) of desert dry wash woodlands and 18,634 acres (21.15 percent) of unvegetated ephemeral dry washes. The Reconfigured Alternative 2 (Option 2) would account 0.41 percent and 0.99 percent of impacts to those features, respectively. Loss of sand dune communities would total 175 acres (0.28 percent). If developed, Reconfigured Alternative 2 (Option 2) would account for nearly 52% of impacts to that community type. The cumulative effect of the Reconfigured Alternative 2 (Option 2), in combination with other cumulatively considerable projects in the Study Area, on groundwater-dependent vegetation, invasive weeds, and rare plant species would be similar to that described above for the PSEGS.

No Action Alternative A

If No Action Alternative A were selected, the PSEGS would not occur at the project site and none of the associated impacts on natural vegetation communities described above would occur in the near term. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project. Such development could result in cumulative impacts similar to those of the PSEGS or PSPP; however, insufficient detail is known about any potential future solar project on the proposed site to provide a meaningful analysis.

4.17.4 Summary of Mitigation Measures

The Applicant voluntarily has committed to implementing as APMs nearly all of the mitigation measures identified in PSPP PA/FEIS Section 4.17.4 (p. 4.17-29), although some of the PSPP PA/FEIS mitigation measures have been revised to reflect differences between the PSEGS and the PSPP. The full text of all APMs is set forth in Appendix C. Specifically with respect to the APMs that are intended to address potential vegetation-related impacts, the relevant differences between the PSEGS and the PSPP include the PSEGS's: reduction in the amount of site grading proposed, elimination of reengineered water conveyance channels (affecting desert dry wash woodland and unvegetated ephemeral dry wash vegetation communities), and the changing legal statuses of rare plants based on the scale of data produced by regional project surveys. Mitigation ratios in the APMs are the same as those included in the mitigation measures for the PSPP.

The APMs reduce or avoid adverse impacts to PSEGS-affected vegetation communities. The following mitigation measure is suggested to better protect vegetation resources that could be affected by the PSEGS:

> **SEIS Mitigation Measure BIO-1:** Incorporate previously unsurveyed areas into the rare plant survey provisions of APM BIO-19, *Special-Status Plant Impact Avoidance, Minimization, and Compensation*, to ensure that adequate spring and fall-season surveys are conducted of new PSEGS areas. New PSEGS areas that may not have been sufficiently surveyed include the proposed natural gas line extension, distribution yard, and gen-tie line reroute.

Noxious and Invasive Weeds

Contributions of the PSEGS to substantial cumulative indirect effects related to the spread of Sahara mustard and other invasive weeds into dunes and adjacent habitats would be addressed by the implementation of APM BIO-8 (Impact Avoidance and Minimization Measures) and APM BIO-14 (Weed Management Plan). See Appendix C for details.

Climate Change

As discussed in Section 4.3, *Impacts to Global Climate Change*, potential losses of carbon sequestration on site due to disturbance of natural processes would be minor in comparison to the operation of the PSEGS, which would result in the offset of GHG emissions from fossil fueled power plants. Therefore, the PSEGS, even when considering GHG emissions associated with construction and loss of naturally occurring carbon sinks, is anticipated to provide a net benefit in terms of GHG reduction. Additionally, implementation of the identified APMs for biological resources would further offset GHG emissions due to the loss of naturally occurring carbon sequestration on site. These measures would compensate for loss of natural carbon sequestration potential and other impacts of climate change due to habitat loss by preventing the future development of desert lands through acquisition and permanent protection under conservation easements (APM BIO-12, APM BIO-19, APM BIO-20, and APM BIO-21), focusing the acquisitions into important linkages for species dispersal into critical refugia, restoring degraded portions of acquired lands (APM BIO-19), and minimizing the size of the disturbance area along the linears (APM BIO-8 and APM BIO-19).

Native Cacti, Succulents and Trees

Biological surveys in 2009, 2010, and 2013 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. Potential impacts to these and other applicable non-listed plant species from the PSEGS would be addressed through APM BIO-8, APM BIO-14, APM BIO-23, and APM BIO-24.

Closure and Decommissioning

Potential impacts to vegetation resources from closure and decommissioning of the PSEGS would be addressed by implementing APM BIO-22, which would involve the preparation of a Decommissioning and Reclamation Plan and cost estimate that meets all applicable laws and regulations.

4.17.5 Residual/Unavoidable Adverse Impacts after Applicant Proposed Measures are Implemented

The PSEGS would have residual impacts to vegetation resources, eliminating some and degrading all of the Sonoran creosote bush scrub and other native vegetation communities within the disturbance area. Even with reduced soil grading activities, which would retain root structure, soil surfaces, and presumably surface hydrology over much of the solar field, the practice of maintaining vegetation height at a 12-inch maximum during project operations would stunt the growth or result in the death of larger canopy shrubs. This could result in secondary effects to understory plants in the Sonoran creosote bush scrub vegetation community. The PSEGS would have residual sand shadow effects to downwind sand dune habitat in the Palen Dry Lake-Chuckwalla sand transport corridor. The PSEGS also would fragment and degrade adjacent native plant and wildlife communities, and could promote the spread of invasive non-native plants.

4.18 Impacts on Visual Resources

This section analyzes the direct and indirect effects on visual resources that would occur with implementation of the PSEGS and identifies measures to avoid or reduce visual effects. Overall, the PSEGS would result in long-term visual alteration to approximately 3,794 acres of land managed under an Interim VRM Class III designation. Issues of viewshed and visibility are discussed at length in this section, and the reader may find it useful to refer to the viewshed map presented in Figure 3.19-3.

4.18.1 Impact Assessment Methodology

The visual resources impact assessment methodology described in PSPP PA/FEIS Section 4.18.1 (p. 4.18-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with the Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found on PSPP PA/FEIS pages 4.18-18 and 4.18-19, respectively. The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.18.3, below).

Selection of Key Observation Points

The PSEGS Key Observation Points (KOPs) include 9 KOPs that were analyzed in the PSPP PA/FEIS[1] as well as 9 new KOPs identified in consultation with the BLM, Tribes, and the National Park Service (NPS). See PPSP PA/FEIS page 4.18-10 and the following for a description of the 9 KOPs shared by the PSPP and PSEGS. New KOPs are also described below.

The new KOPs initially were identified as sensitive receptors (SR) in the Palen Solar Visual Resources Analysis Report (VRAR), completed by 3DScape. SRs are vantage points on the landscape that represent important public and private views that could be affected by the PSEGS. The contrast rating is done from the KOPs, which represent the most critical viewpoints. They are usually along commonly traveled routes or at other likely observation points. Factors that are considered in selecting KOPs are: angle of observation, number of viewers, length of time the project is in view, relative project size, season of use, and light conditions (BLM Manual H-8431). Extensive research was conducted by 3DScape, as described in the PSEGS Visual Resources Analysis, to fully evaluate where SRs are located within the Chuckwalla Valley viewshed. The research relied heavily on previous studies of the visual environment and included published visual studies from the PSPP EIS. The KOPs for the PSPP PA/FEIS were researched and used where applicable. However, the PSEGS proposes a technology that has a substantially greater vertical presence. This requires using a much larger visual impact threshold distance to assure that all potentially visible areas are considered in the analysis. Other documents consulted include the Devers-Palo Verde 2 EIS, Desert Sunlight Solar Farm EIS, Genesis Solar Energy EIS, and the documentation of visual values from documents provided by BLM's Palm Springs South Coast Field Office's (PSSCFO) web site. Secondary research included BLM's Desert Access Guides, USGS quadrangle maps (1:24,000, 1:100,000, and 1:250,000), recent best science research on

1 PSPP PA/FEIS KOP locations were relocated as closely as possible using GIS data and field-verification.

visual impact threshold distances of renewable energy projects (Argonne National Laboratory), theoretical prediction of glare potential from renewable energy projects (Sandia National Laboratory), and the EISs for the Rio Mesa and Hidden Hills projects proposed by the Applicant using similar technology. Additionally, as stated earlier, the entire breadth of BLM's Solar PEIS is taken into consideration, particularly those discussions centered on the Riverside East SEZ (3DScape, 2013).Development of the KOPs for the PSEGS included consideration of 17 SR points located within the 30-mile-radius (2,827 square miles) visual impact threshold distance (VITD) boundary, as shown in Figure 3.19-3. Given the adjacency of JTNP and its sensitive receptors and dark sky, great care was given to areas administered by the NPS. The viewshed delineation and subsequent analysis of other data layers revealed that the PSEGS viewshed overlays 4.86 percent of JTNP. Because of the proximity of the Coxcomb Mountains, which are a part of the JTNP Wilderness Area, 10.1 percent of the JTNP Wilderness Area is within the PSEGS viewshed. This analysis employed a multiple criteria decision analysis matrix to quantitatively identify which of the SR locations were the most visually sensitive (3DScape, 2013). Based on this analysis, 9 of the 17 SRs were elevated to KOP status. These nine KOPs are added to the baseline visual conditions for the analysis. The SRs that were elevated to KOPs are KOPs 3A, 7A, 8A, 9A, 10A, 12A, 13A, 15A, and 17A. These new KOPs are spatially represented on Figure 4.18-1A.

Visual Simulations

Computer-aided drafting and design (CADD), GIS, and GPS allowed for life-size modeling. These tools utilize real-world scale and coordinates to locate the PSEGS facilities, other site data, and the camera locations corresponding to three-dimensional (3D) simulation viewpoints. The CADD drawings and the KOPs were input into GIS and the camera positioning information was referenced to the 3D data set and the 3D modeling was generated. Using the computerized visual simulations, predicted future visual effects of the PSEGS for each KOP are described below. Visual contrast rating sheets for the PSEGS are not available for the original nine KOPs; however, contrast rating forms have been completed for the nine new KOPs based on the visual simulations.

4.18.2 Direct and Indirect Impacts of the PSEGS

Project Appearance

The PSEGS would convert approximately 3,896 acres (approximately six square miles) of naturally-appearing desert plain to an industrial facility characterized by complex, geometric forms, lines, colors, and textures that are dissimilar to the forms, lines, colors, and textures of the characteristic landscape. Described more fully in Section 3.19, the PSEGS would occur within the Chuckwalla Valley. The valley is characterized by its planar basin comprised of sandy soils and incised drainages, the sinuous lines of alluvial fans descending from the more textured bajadas, and the jagged lines and complex forms of the rugged mountains beyond. The colors generally transition from light tan basin soils mottled with intermittent patches of desert scrub vegetation; giving rise to the darker browns of the bajadas' desert varnish; to the browns, blues, and pinks of the mountains that lighten with their distance on the horizon. See Figure 3.19-1 for a representative photograph depicting the characteristic landscape.

Much of the developed area would be covered with two solar fields consisting of heliostats, generally arranged in concentric circles, each surrounding a power block and power tower at their centers. Figure 4-18.2 shows example images of existing power tower facilities. Figure 4-18.3 shows a simulated rendering of the PSEGS from an oblique view to demonstrate the general configuration and appearance of the power tower facility in the landscape. Figure 4.18-3a includes a simulated rendering of the Project as it would be viewed from ground level, approximately 6 miles to the east, looking west from I-10. Due to the Project's proximity to the interstate, motorists traveling along I-10 are expected to be the user group most likely to encounter views of the Project.

The solar fields of heliostats would occupy most of the disturbed area. Each of the heliostat assemblies would be comprised of two mirrors, each approximately 12 feet tall by 8.5 feet wide, with a total reflecting surface of 204.7 square feet. Figure 4.18-4 shows the size and reflectivity of typical heliostat mirrors. Each heliostat assembly would be mounted on a single pylon and rotate to track the movement of the sun. The final layout would be completed during detailed design, but the entire project is estimated to consist of a total of 170,000 heliostats (85,000 per solar field). Each solar field also would contain a 750-foot-tall power tower (topped by a 10-foot tall lightning rod) and associated power block, along with various buildings and structures for electrical generation and facility maintenance, which mostly range from 10 feet to 120 feet. The tallest proposed structures are the two power towers, followed by two boiler pump power distribution centers, each approximately 160 feet tall, and two air cooled condensers, each approximately 120 feet tall. The project would also include construction of an approximately seven-mile 230 kV power overhead transmission line mounted on poles rising to a maximum height of 120 feet, and a 0.56 mile underground natural gas pipeline extension. The transmission line would extend from the PSEGS electricity switchyard to the Red Bluff Substation. The Red Bluff Substation is located adjacent to and on the south side of I-10, west of the PSEGS site. Figure 2-2 shows the proposed gen-tie line alignment. A steel monopole design would be used for the gen-tie line. This analysis assumes the poles' base diameter would be 6 feet and the top diameter would be 3 feet; the poles would be spaced approximately 1,100 feet apart (Galati, 2013). Once constructed, the poles could have significant visual contrasts in the landscape.

Chapter 2, *Proposed Action and Alternatives*, provides a detailed description of the PSEGS's proposed civil/structural features. The approximate dimensions of these features are summarized below (Table 4.18-1) for purposes of this analysis.

Construction-Phase Impacts

During the construction period, earth-moving activities and construction materials, equipment, trucks, and parked vehicles, all could be visible on the site and along the ROW. Construction would occur over a 34 month period, during which a number of activities would take place, including the construction of the towers and related structures, foundation pouring, earthwork, operation of a concrete batch plant, and heliostat assemblage and installation. The 203-acre temporary construction laydown area on the west side of the site would be used for equipment laydown, construction parking, construction trailers, a tire cleaning station, heliostat assembly, a temporary concrete batch plant and other construction support facilities. Figure 4.18-5 shows an

TABLE 4.18-1
APPROXIMATE DIMENSIONS OF PROJECT STRUCTURES

Component (Quantity)	Dimensions (LxWxH) (Feet) / Capacity	Footprint (square feet)
Common Area		
Administration Building Including Control Room (1)	80x180x34	14,400
Maintenance Shops and Warehouse Building (1)	90x120x48	10,800
Firewater Storage Tank (1)	25x(N/A)x15	N/A
Firewater Pump House (1)	12x36x10	432
Emergency Diesel Generator Enclosure (1)	12x18x10	216
Power Blocks #1 and #2		
Solar Tower Including Solar Receiver Steam Generator (2)	75 (diameter) x750 (height)	N/A
Steam Turbine Generator Enclosure (2)	34x46x52 EA	1,564 EA
Air Cooled Condenser (2)	220x300x120 EA	N/A
Steam Turbine Enclosure (2)	40x56x52 EA	2,240 EA
Steam Turbine Generator Lube Oil Enclosure (2)	22x38x18 EA	836 EA
Deaerator/Feedwater Heater Structure (2)	56x66x80 EA	N/A
Emergency Diesel Generator Enclosure (2)	12x32x12 EA	384 EA
Plant Service Building (2)	56x100x16 EA	5,600 EA
ACC Power Distribution Center (4)	14x50x16 EA	700 EA
Fire Water Pump House (2)	36x12x12 EA	432 EA
Demineralized Water Storage Tank (2)	26x(N/A)x26 EA	N/A
Service/Firewater Storage Tank (2)	40x(N/A)x30 EA	N/A
Mirror Wash Water Storage Tank (2)	25x(N/A)x21 EA	N/A
Boiler Pump Power Distribution Center (2)	50x14x160 EA	700 EA
Waste Water Storage Tank (2)	25x(N/A)x23 EA	N/A
Water Treatment Power Distribution Center (2)	30x14x16 EA	420 EA
Night Preservation Auxilary Boiler (2)	10x12x12 EA	N/A
Start-up Auxilary Boiler (2)	14x56x16 EA	N/A
Mirror Wash Vehicle Refueling and Storage Area Canopy (2)	74x116x24 EA	N/A
Mirror Wash Vehicle Storage Area Canopy (2)	40x184x20 EA	N/A
Wet Surface Air Cooler (WSAC) (2)	48x36x26 EA	N/A
Thermal Evaporation Unit (2)	34x18x64 EA	N/A
Residue Tank (2)	12x(N/A)x13 EA	N/A
Water Treatment Building (2)	66x90x26 EA	5,940 EA
Generator Step-up Transformer (2)	12x26x22 EA	N/A
Drains Tank (2)	12x(N/A)x13 EA	N/A

SOURCE: Palen Solar Holdings, LLC, 2012.

image of a typical construction staging area. PSEGS construction also would include the installation of temporary construction facilities including office trailers, parking areas, material laydown areas, a concrete batch plant, and a heliostat assembly facility. The construction would begin with site roads, and earthwork would include earthen berms around the power block areas to divert storm water, followed by the excavation and placement of foundations and other underground facilities. From the more common viewpoints (e.g., I-10), these construction activities generally would result in a moderate to high degree of visual contrast within the landscape, depending on phase of construction.

However, certain visual effects would be specific to construction activities, and could include the generation of large quantities of airborne dust and nighttime construction lighting. The affected viewers would be primarily the 5,300 motorists passing the project site during peak-hour weekday traffic on I-10, low numbers of OHV users, 204 Desert Center and Lake Tamarisk residents (US Census, 2010), and dispersed users seeking solitude and unconfined recreational opportunities in the surrounding designated wilderness. Although the construction period is estimated to occur over approximately 34 months, construction would be phased, so it would not occur in any one place for the entire period. The maximum acreage estimated to be actively used on any single day is less than or equal to 260 acres. Activities that would generate dust, such as earthmoving, would occur episodically throughout the construction period, and nighttime construction lighting would be required to accommodate swing shifts. Generally, construction activities would occur from 5:00 a.m. to 3:30 p.m. with a swing shift during heliostat assembly (from 6:00 p.m. to 4:00 a.m.) and during tower construction (which may occur in three shifts around the clock until these tasks are completed). Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., tower construction, foundation pouring, or working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the PSEGS, some activities would continue 24 hours per day, 7 days per week. Such activities may include but not be limited to the installation of heliostats and pouring of concrete for power towers.

Many of the potential visual impacts associated with the PSEGS, such as those associated with the height and mass of the cooling towers, fencing, administrative complex and control buildings, and other features common to the projects, were also identified in the PSPP PA/FEIS. The mitigation measures identified in the PA/FEIS to minimize these impacts have been adopted by the applicant and incorporated in the PSEGS. Such measures would apply equally to construction and operations activities unique to the PSEGS. These measures, identified in this Draft SEIS as Applicant Proposed Measures (APMs), are presented in Appendix C. APMs that would reduce visible dust emissions include limiting the speed of vehicles, surfacing construction access roads, and controlling wind erosion on soil stockpiles (see APMs AQ-SC-3 and AQ-SC-4). Measures to address the texture and color of project buildings and structures, including the power towers, are addressed in APMs VIS-1 and VIS-5, including the preparation of a Surface Treatment Plan in consultation with a BLM Visual Resource Specialist. When nighttime construction activities take place, illumination would be provided that meets state and federal worker safety regulations. To the extent possible, the PSEGS's nighttime construction lighting would be directed downward or toward the area to be illuminated and would incorporate fixture hooding/shielding. Task-specific lighting would be used to the extent practical while complying with worker safety regulations (See APM VIS-3). Disturbed areas that would not be needed during operation and maintenance of the PSEGS would be restored, and temporarily disturbed areas would be recovered with soil, brush, rocks, and natural debris (see APMs BIO-8, BIO-22, and VIS-2). Due to the scale and strong forms and lines of the two power towers, VIS-5 has been added to specifically address mitigation measures for the towers and power block structures.

Operation-Phase Impacts

During the operation of the PSEGS, visual effects would be caused by the visible elements of the Project. The discussion below is divided between visual effects that are not fully captured by visual simulations (nighttime lighting and reflected sunlight/glare) and the visual contrast ratings of the PSEGS simulated in each KOP.

Light and Glare (all KOPs, with the exception of KOP-17A)

Operational Lighting

PSEGS operations would require onsite nighttime lighting for safety and security, and heliostat mirror washing, and would require aviation lighting for power tower structures (transmission facilities would not require aviation lighting). The site is located in an area with few existing structures, and the use of uncontrolled or excessive lighting would be noticed by nearby motorists, residents of Desert Center and Lake Tamarisk, and could affect the nighttime experience for dispersed recreational users in surrounding designated wilderness areas. Facilities and operations lighting plans would be developed in consultation with the BLM, Tribes, and NPS. As described more fully in Appendix C, APM VIS-3, to reduce offsite lighting impacts, the Applicant would limit lighting at the facility to areas required for safety, security, and operation. The Applicant would consider setbacks of PSEGS features from the site boundary to aid in satisfying mitigation requirements. Lighting also would incorporate fixture hoods/shielding with light directed downward. Light fixtures that would be visible from the ROW boundary would have cutoff angles that would be sufficient to prevent their visibility from beyond the ROW boundary, except where necessary for security. As much as practical, lighting would be of minimum necessary brightness. Lights in high illumination areas (such as maintenance platforms) would have switches and/or motion detectors so that the lights operate only when the area is occupied. Implementation of these APMs would minimize the amount of lighting potentially visible to viewers of the site at night.

Because the height of the solar thermal power towers exceeds 200 feet, FAA compliant aircraft warning lights would be required (FAA 2007). For the PSEGS, these high-intensity lights would flash white during the day and at twilight and red at night.

Adverse effects of facility lighting are not necessarily limited to views of the site itself. Excessive lighting also could cause an adverse affect to viewers of the night sky via sky glow, which diminishes the visibility of the nighttime sky and stars. Visual simulations prepared by the Applicant indicate that the Project lighting could be visible at night from locations as far away as 19 miles, including from locations north of Desert Center (12.4 miles), Northeast of Eagle

Mountain (19.4 miles), and South of Eagle Mountain (15.6 miles) (Truescape, 2013). Prevention of offsite light spillage for ground observers does not necessarily prevent back-reflected light (i.e., light reflected off the ground and/or structures from down-directed lamps) from diminishing the visibility of the night sky. Normally, the contribution of project-related lighting is negligible when in an environment with abundant light sources; however, the area that could be affected by the PSEGS, specifically NPS lands, is highly valued in terms of the quality of its nighttime skies. This is attributable to the scarce and scattered nature of existing light sources in the surrounding area and the percentage of federally administered land allocated for conservation purposes in the region, which limits opportunities for development. While the level of use in the surrounding wilderness is considered to be low, the high visibility of the nighttime sky and stars is an important component of the wilderness experience for many backcountry users and its protection is a priority NPS management policy.

While the APMs would not totally eliminate the light visible by surrounding user groups, facility lighting would be minimized and controlled such that it would not be a nuisance and would not detract from the ability for affected viewers to enjoy their surroundings.

Glint[2] and Glare[3] from the Heliostats and Power Tower Illumination

Power tower projects generally have larger visual impacts compared to other solar technologies because of the relatively tall and brightly illuminated receiver towers. The solar receiver steam generators (SRSG) on top of the towers are approximately 68 feet tall and 100 feet wide. These dimensions result in an active receiver area of about 21,370 square feet when viewed straight on. In addition to the receiver towers and heliostat fields, the PSEGS would include other components that may have reflective surfaces, such as heliostat support structures, steam turbine generator components, piping, and fencing.

The reflecting surface of the heliostat is essentially a mirror and, as such, is a highly reflective surface. Where visible, heliostats could display highly variable surface color and brightness. Viewed from certain angles, specular reflection, or an object’s reflection of light towards an angle opposite that of its approach, might result in glint or glare from these surfaces, particularly from elevated viewpoints. Power tower facilities are typically configured with the heliostats arrayed in concentric circles around the central tower. Unlike parabolic trough collectors, PSEGS heliostats do not face the sun except when the sun and the SRSG are at the same angle from the heliostat’s perspective, in which case the heliostats are pointing into the sky and not towards potential sensitive receptors at ground-level. At all other times that they are tracking the sun, the heliostats would face approximately halfway between the sun and the SRSG. The only exception are mirrors in a 90-degree stow position. The only such mirrors allowed to point in the direction of I-10 are those which are blocked from the motorists’ view by thousands of other heliostats (not pointed towards the highway). The heliostat supports would be primarily metal and would also

2 Glint is a momentary flash of light resulting from a spatially localized reflection of sunlight. (BLM, 2013)
3 Glare is the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility. (BLM, 2013)

reflect light. However, reflectivity of these surfaces would be lessened through APMs specifying paint or low reflectivity coatings, and they often would be shaded by the heliostats in any event.

In addition to visual impacts from the tower structure, the sunlight focused on the SRSG by the heliostats during normal operations causes the surface of the receiver to appear to glow with sufficient intensity to be visible for long distances; however, the apparent glow is actually diffuse reflected sunlight. The tower receivers can appear brilliantly white at close distances, and the light from relatively small-scale existing facilities has been observed at distances of 25 miles. The Applicant estimates that the intensity of light emitted from the SRSG is 70W/m2. For comparison, the intensity of visible light from the sun is 80,000W/m2, meaning that the glow of the receiver tower is estimated to be one-one thousandth that of the sun (0.1%).

The perceived intensity of this reflection would vary based upon the angular size of the object from the vantage point of the viewer. Generally, as distance from the receiver increases the angular size of the object decreases, as does the perceived intensity of the luminance. This intensity is measured by the visual angle (in radians), which is the ratio between the diameter of the receiver and the distance in meters of the viewer from the receiver. For example, at 1.86 miles from the receiver, the visual angle is 0.01 radians, which is about the visual angle of the sun. Moving away from the project site, the visual angle of the SRGS would be 0.037 radians at 0.5 miles, 0.018 radians at 1 mile, 0.009 radians at 2 miles, 0.004 radians at 5 miles, and 0.002 radians at 10 miles. The minimum viewing distance from I-10 towards the northwestern tower is 6,496 feet (1.23 miles) and the minimum viewing distance from I-10 towards the southeastern tower is 4,429 feet (0.84 miles) (PSH, 2013b). Observations to date have not shown the SRSG light to be as intense as the glare observed from parabolic trough facilities (Sullivan et al., 2012).

In addition to heliostat reflections and glare from the SRSG, at certain times of the day and from certain angles, the reflection of sunlight on ambient dust particles in the air could occasionally result in the appearance of light streaming diagonally downward and/or upward from the tower in a luminous, transparent, tent-like form.

Because the design and operation of the power tower and heliostats is integral to generating power, the heliostat mirrors cannot be color treated or dulled. Moreover, since the heliostats would be continually moving throughout the day, the backs of the heliostats would be seen equally as often as the fronts (assuming a fixed vantage point). The Applicant has incorporated the mitigation measures identified in the PSPP PA/FEIS to reduce the frequency of intensity of distracting light and reflected glare from the solar fields. Described more fully in Appendix C, these Applicant Proposed Measures include the painting or treatment of reflective surfaces, including, if necessary, the backs of the heliostats (see APMs TRANS-6, VIS-1 and VIS-5).

With respect to glint and glare specifically, APM TRANS-6 includes provisions for documentation of heliostat position and movement, a description of the health and safety effects of the programmed heliostat operation, and development of a monitoring plan. To further reduce the potential for project-related glint and glare impacts, TRANS-6 is modified to include a pre-construction glint and glare assessment, as described under Section 4.18.4, *Summary of Mitigation Measures*, below.

Despite the effectiveness of these measures, they would not eliminate the spread reflection or bright glow of the SRSG. The contribution of glint, glare, and receiver light impacts is considered in the contrast discussion of each KOP below. Impacts of glint and glare on public safety are also addressed in Section 4.11, *Public Health and Safety*, of this Draft SEIS.

Glint and Glare from Power Block Buildings, Administrative Buildings, and Transmission Lines

The PSPP PA/FEIS addresses potential impacts associated with glint and glare from the PSPP power block buildings, administrative buildings, and transmission lines on page 4.18-10. The discussion is equally applicable to the PSEGS, and has not been supplemented.

Visual Contrast Ratings

To analyze the visual contrast in the landscape, the PSEGS has been simulated in computer derived photographs of the area for original KOPs 1-9 and new KOPs 3A, 7A, 8A, 9A, 10A, 12A, 13A, 15A, and 17A, described in Section 4.18.1, above. Conclusions of PSEGS visual contrast analysis presented below do not take into consideration the nighttime contrast (lighting color and intensity), which is discussed above. Documentation of the visual contrast ratings (BLM Form 8400-4, Visual Contrast Rating Worksheet) is included in Appendix G.

Noted above, motorists traveling along CA 177 and I-10 are the single largest user group that would be exposed to the visual impacts associated with the PSEGS. Vehicles travel at high rates of speed along these routes and therefore drivers' views of the Project would be fleeting. Moreover, highway drivers have a narrower field of view than other users and are expected to be focused mainly on vehicle operation and road conditions in the immediate foreground. The duration of visual exposure for the average freeway traveler would be about 14 minutes[4]. As such, the PSEGS facility may not be as conspicuous for this user group as it would be for others with greater visual exposure (e.g., hikers, campers, and ORV users) in the area.

KOP-1: Highway 177 and Palen Pass Road

This KOP represents the view for southbound motorists on Highway 117 (Figure 4.18-7). The project is located in a range of 13 to 16 miles south of this KOP. Although the solar fields and structures are greatly diminished due to distance, the glowing power tower receivers are prominently visible, appearing as two bright lights below the horizon of the Chuckwalla Mountains Wilderness. The low viewing angle (and long distance) reduces the visual contrast. Even though the power tower lights would be visible, due to the distance and intervening atmospheric haze, their intensity is diminished. The power towers and associated facilities do not appear to dominate the landscape from this KOP. Glint, which is a momentary event, and glare from the heliostats could momentarily increase the color contrast of the PSEGS.

[4] Assumes an average visual distance of 15 miles and a travel speed of 65 miles per hour.

The Applicant proposes a number of measures to reduce the degree of form, line, color and texture contrast. These measures, described more fully in Appendix C, would include applying color and texture treatments to proposed structures to blend in with the surrounding landscape, by restoring disturbed areas (such as revegetating the landscape), and by strategically placing structures and linear alignments to repeat the basic visual elements in the landscape (see TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6). For example, Figure 4.18-6 includes an image of vegetation that was preserved and trimmed under the installed heliostats of a constructed power tower project. The Applicant's development and implementation of a heliostat positioning plan, as described in TRANS-6, would prevent bright flashes due to movement in or out of stow position, but would not fully mitigate the effects of glint and glare. In summary, the APMs would reduce glint and glare, and are likely to reduce the degree of color contrast in the landscape. Although the APMs would be visually beneficial, the PSEGS still would be visible and could be perceived from KOP-1.

KOP-2: Highway 177 at the edge of Joshua Tree Wilderness

This KOP represents the view for southbound motorists on Highway 117 and views from low-elevation portions of the far-eastern end of Joshua Tree National Park (JTNP) (Figure 4.18-8). In this portion of the JTNP, there are no hiking trails, picnic areas, campgrounds or other visitor-serving facilities and thus visitor use in the area is expected to be low. The PSEGS is located in a range of 8 to 11 miles southeast of this KOP, and all major elements of the project would be visible, including the power towers, power blocks, structures, and solar fields. The power towers would be more prominent from this viewpoint. The power tower on the left would break the horizon line of the Chuckwalla Mountains Wilderness. However, even though the towers attract attention, they do not dominate the landscape.

Noted previously, the Applicant proposes several measures to reduce the length and intensity of glint and glare. Described more fully in Appendix C, these include treatment of reflective surfaces, revegetating disturbed soils, and incorporating design treatments to minimize visual intrusion, among others (see APMs TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6). Implementation of these measures would reduce the length and intensity of glint and glare of the solar fields and structures, and would be likely to reduce the degree of color contrast in the landscape; however, these efforts would not totally eliminate the contrast of the PSEGS in the landscape.

KOP-3: Desert Lily Sanctuary entrance/parking area

This KOP represents the view for low numbers of visitors to the Desert Lily ACEC and OHV users (Figure 4.18-9). The PSEGS site is located in a range of 7 to 10 miles southeast of this KOP; all of its major elements would be visible, including both power towers, power blocks, and solar fields. Both power towers rise above the horizon of the Chuckwalla Mountains Wilderness beyond and the receiver lights appear to be more intense in brightness, but because of distance, the towers would not dominate the landscape. The project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence and illumination of the towers and receivers.

KOP-4: Eagle Mountain Road

This KOP represents the view for OHV users, and dispersed recreational users (Figure 4.18-10). The proposed site is located in a range of 13 to 16 miles southeast of this KOP; all major elements of the PSEGS would be visible, including both power towers, power blocks, and solar fields. The power towers would be the tallest structures on the horizon and the bright lights of the receivers would be apparent; however, due to distance and associated atmospheric haze, these elements would not be expected to dominate the landscape. The project's incorporation of the above described APMs, (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6) would reduce the length and intensity of glint and glare, and would be likely to reduce the degree of color contrast in the landscape; however, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence and illumination of the towers and receivers.

KOP-5: I-10 Interchange at Desert Center

This KOP represents the view for eastbound motorists on I-10 at Desert Center (Figure 4.18-11). The site is located in a range of 8.5 to 11.5 miles east of this KOP. The degree of contrast primarily would result from the vertical power tower structures. During operation, the apparent glow of the receivers would attract attention from a casual observer. The solar field would be screened by vegetation and topography. Incorporation of the above noted APMs (i.e., VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6) would reduce the visual contrast that might otherwise be created by the PSEGS's heliostat field and power block. However, there are no reasonable mitigation measures that would reduce the visual contrast of the two 750-foot-tall power towers protruding above the horizon.

KOP-6: Residential community entrance/exit in Desert Center

This KOP represents the view of the PSEGS for residents in the Desert Center area (Figure 4.18-12). The site is located in a range of 8.5 to 11.5 miles east of this KOP. The visible feature of the PSEGS from this KOP would be the power towers. Intervening topography and structures would screen views of the solar fields and power blocks from this viewpoint. The degree of visual contrast created by the PSEGS from this location would be the same as described above for KOP-5. Thus, for the same reasons described above, the visual contrast would draw attention from the common observer, but would not dominate the landscape.

KOP-7: Corn Springs Road at the edge of Chuckwalla Mountains Wilderness

This KOP represents the view for northbound motorists on Corn Springs Road exiting the access points for the Chuckwalla Mountains Wilderness (Figure 4.18-13). The proposed site is located in a range of 1.5 to 4.5 miles north of this KOP; all of the major elements of the PSEGS would be visible, including both power towers, power blocks, and solar fields. From this KOP, the PSEGS would result in a moderate to strong contrast. The strong contrast would come from the brilliant light of the power tower receivers, glare and glint from the solar fields, and the form of the power block structures and power towers, which are vertical, cubed and rectilinear in a landscape that otherwise is largely absent of such forms. At all times, the PSEGS would likely be a major focus of viewer attention, largely because of the glow of the power tower receivers and structures in the landscape.

Incorporation of APMs would lessen the degree of visual contrast that might otherwise be created by the proposed solar field (see Appendix C, APMs TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6). Through these measures, the Applicant would reduce the degree of contrast by applying color and texture treatments to project structures to blend in with the surrounding landscape, by revegetating disturbed areas, and by strategically placing structures and linear alignments to repeat the basic visual elements in the landscape. The proposed heliostat positioning plan (TRANS-6) would help prevent bright flashes due to movement in or out of stow position, but would not fully mitigate the effects of glare from diffuse reflections of the sun due to this viewpoint's elevated position. While the color and texture treatments would aid greatly in reducing the color and, due to the size and scale of the PSEGS, it is unlikely that these measures would be sufficient to reduce contrasts in form to moderate levels. Successful implementation of APMs would reduce the color contrast to acceptable levels, except while the power tower is in operation and during periods of glare.

KOP-8: I-10 eastbound near the southwestern corner of the Project

This KOP represents the view for eastbound motorists on I-10 (Figure 4.18-14). The proposed site is located 0.7 to 3.7 miles north of this KOP; most major elements of the PSEGS would be visible, including both power towers, power blocks, and solar fields.

At this close viewing distance, the PSEGS would result in a strong contrast for all of the design elements for the landscape features of vegetation and structures. The strong contrast would come from the brilliant light of the power tower receivers, glare and glint from the solar fields, and the form of the power block structures and power towers, which are vertical, cubed and rectilinear in a characteristic landscape that is otherwise largely absent of such forms. At all times, the PSEGS would likely be a major focus of viewer attention, largely because the landscape is otherwise absent of large structures and the PSEGS would be dominant in the landscape.

Incorporation of APMs would lessen the degree of visual contrast that might otherwise be created by the proposed solar field (see Appendix C, APMs TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6). Through these measures, the Applicant would reduce the degree of contrast by applying color and texture treatments to project structures to blend in with the surrounding landscape, by revegetating disturbed areas, and by strategically placing structures and linear alignments to repeat the basic visual elements in the landscape. The proposed heliostat positioning plan (TRANS-6) would help prevent bright flashes due to movement in or out of stow position, but would not fully mitigate the effects of glare from diffuse reflections of the sun due to this viewpoint's elevated position. However, due to the brightness of the power tower receiver and the size and scale of the PSEGS from this close distance, it is unlikely that the APMs would be sufficient to reduce contrasts in form, line, and texture to moderate levels. Successful implementation of these APMs would reduce the color contrast to acceptable levels, except during periods of glare.

KOP-9: I-10 westbound near the southeastern corner of the Project

This KOP represents the view for westbound motorists on I-10 (Figure 4.18-15). The proposed site is located 2.5 to 5.5 miles northwest of this KOP; the proposed power towers and power block structures would be visible. The solar fields appear to be screened by topography and vegetation. The degree of visual contrast created by the proposed power towers from this location is the same as described above for KOP-8.

KOP-10 and KOP-11: Palen-McCoy Wilderness and Chuckwalla Mountains Wilderness

There were no PSEGS simulations created for the PSPP PA/FEIS-analyzed KOP-10 (Palen-McCoy Wilderness) and KOP-11 (Chuckwalla Mountains Wilderness), thus these KOPs are not included in the impact assessment. However, KOP-12A and KOP-15A were completed from very similar locations and will replace KOP-10 and KOP-11 in this impact assessment.

KOP-3A: Coxcomb Mountains Wilderness Area

KOP-3A is located in the Coxcomb Mountains in lands managed by JTNP. Additionally, it is located in Joshua Tree WA. The project site is to the southeast of this KOP. This view is characteristic of the view available to dispersed recreationists in JTNP. Visitor use can be expected to be low because of the lack of visitor services and no established or maintained trail networks. It is 9.9 miles from the PSEGS site and occupies a topographically superior viewing angle.

The contrast rating exercise demonstrates that the Project will produce moderate contrast to the landscape elements of line and form. Weak contrasts were further identified for color and texture. As demonstrated by the visual simulation from KOP-3A, the heliostat array is only faintly discernible from this vantage point due to its slightly inferior angle of observation. The viewer's ability to discern the heliostat field is important, because of its extent and its color contrast with the existing ground plane. The PSEGS as seen from KOP-3A would create moderate visual contrasts of form and line, and weak visual contrasts of color and texture. The project would be in conformance with Class III Interim VRM objectives from this location.

The project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-7A: Big Wash

KOP-7A is located in JTNP, east of the WA boundary. There is easy access to KOP-7A by Hayfield Road and it occupies a topographically superior viewing perspective. KOP-7A is located 15.5 miles from the PSEGS site and is 850 feet topographically superior. Sensitive users would be dispersed recreationists and motorists on lightly used Hayfield Road. Visitor use is expected to be low.

The contrast rating exercise revealed this KOP experienced moderate contrast to line and form despite being in the BLM defined seldom seen zone. The details of the heliostat field are not visible at this distance. The SRSGs' glow would still be detectable to even the casual observer. The color and texture of the PSEGS created weak contrast but was still a discernible landscape feature and could be more contrasting during days with better atmospheric visibility. The simulations do not show any glare but the phenomena may occur as reflected sunlight strikes heliostats that are stowed or being cleaned. This glare would be brighter and more specular than the glare from the SRSG. If this were to occur from this topographically superior position it would attract attention. The PSEGS as seen from KOP-7A would create moderate visual contrasts of form and line, and weak visual contrasts of color and texture. Therefore, the Project as viewed from this perspective would be in conformance with Class III Interim VRM objectives.

The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-8A: Dragon Wash

KOP-8A is located within JTNP, approximately a mile from the JTNP WA. KOP-8A is 15.9 miles from the PSEGS site. The elevation of KOP-8A is 1,390 feet AMSL, or 803 feet topographically superior to the PSEGS site. The nearest power tower is 16.2 miles from KOP-8A. Visitors in this area are primarily dispersed recreationists and those with interests in archaeology. KOP-8A is a very similar view to KOP-7A located in JTNP; KOP-8A is four miles southwest of KOP-8A. The contrast rating exercise produced similar results and conclusions; moderate contrast in form and line and weak contrast in color and texture. Therefore, the Project would be in conformance with Class III Interim VRM objectives from this location.

The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-9A: Alligator Rock ACEC

KOP-9A is located within public land administered by the BLM and managed to protect significant prehistoric resources in the area. There are pictographs and lithic procurement areas. The ACEC is 7,726 acres in size; the most notable landscape feature is the local landmark known as Alligator Rock. The topographic screening at KOP-9A obscures a considerable portion of the PSEGS site. Additively, the creosote scrub and small ironwood trees provide additional vegetative screening. The contrast rating exercise conducted for KOP-9A provided these results: weak visual contrasts of form, line, color, and texture. Therefore, the Project would be in conformance with Class III Interim VRM objectives from this location.

The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-10A: Interstate-10 Eastbound

KOP-10A is located along the heavily traveled I-10 transportation corridor (approximately 5,300 vehicles per day). KOP-10A is located 6.4 miles from the nearest power tower. The elevation of the vantage point is 810 feet AMSL, or 227 feet topographically superior to the PSEGS site. From KOP-10A on eastbound I-10, the PSEGS becomes more apparent because of the closer distance. The PSEGS site is located in the background from this vantage point. Details of the Project are discernible. Although the heliostat field is screened from view at this vantage point, the tops of the aircooled condensers are visible as well as over 600 feet of the power tower concrete base and SRSG. The cylindrical form of the power tower becomes apparent. This view has many cultural modifications, including power lines and an electrical substation, which distract from the characteristics of the natural landscape There is co-dominance with the substation and transmission line towers, all with a large vertical presence.

The contrast rating exercise for KOP-10A identified a strong contrast with the element of line; a moderate contrast in form, and weak contrast with texture and color. This can be directly attributable to the screened heliostat array. The two power towers would protrude above the horizon and would attract attention and produce strong "line" contrasts directly in the cone of vision of eastbound I-10 travelers. Cylindrical form contrasts are moderate, and color and texture contrasts are weak as seen from KOP-10A. The two visible power towers would create a major modification of the existing character of the Chuckwalla Valley as seen from the freeway. The tall height and the heavy mass of the towers would become the major focus of viewer attention as seen from KOP-10A.

Taken as a whole, visual impacts to KOP-10A resulting from the Project are expected to be significant, both as for the project as proposed and as mitigated, per BLM VRM standards, guidelines, and best management practices (BMPs). There are no feasible mitigation measures that could be applied that would reduce the visual contrast of the two 750-foot-tall power towers protruding above the horizon. Vegetative screening and/or architectural screening of these features is not feasible. Thus, the PSEGS's effect on visual resources from KOP-8A would not be brought into conformance with Class III Interim VRM objectives and would be considered an adverse impact on the landscape.

The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-12A (Replaces KOP-11): Chuckwalla Mountains Wilderness Area

This vantage point is within the Chuckwalla Mountains WA and is located on the extensive bajada on the northeastern slope of the Chuckwalla Mountains. KOP-12A is located just over five miles from the nearest power tower.

The strong contrasts of form, line, and color created by the PSEGS would create a major modification of the existing character of the Chuckwalla Valley and Palen Dry Lake as seen against the backdrop of the Palen Mountains. The Project would be a new dominant feature of the landscape visible from this KOP, which is representative of use areas in this wilderness. The Project would change the existing visual character of the viewshed. The two 750-foot-tall solar power towers are the most visually noticeable elements, and from this view at KOP-12A, the heliostat fields are highly visible too. The heliostat fields are horizontal in line and form, shiny silver or blue in color, and smooth in texture. These characteristics create a strong degree of contrast in form, line, and color and a weak degree of contrast in texture. The Project would change the character of the area, and would dominate the landscape and become the major focus of viewer attention as seen from KOP-12A. Taken as a whole, visual impacts to KOP-12A resulting from the PSEGS would be significant and unmitigable, per BLM VRM standards, guidelines, and best management practices (BMPs). Thus, the PSEGS's effect on visual resources from KOP-12A would not be brought into conformance with Class III Interim VRM objectives and would remain adverse.

There are no reasonable or feasible mitigation measures that could be applied that would reduce the visual contrast of the two 750-foot-tall power towers, the elevated air cooled condensers, or the expansive heliostat fields. Vegetative screening and/or architectural screening of these features is not feasible. The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce contrasts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-13A: Interstate-10 Westbound

KOP-13A is from westbound I-10, 6.4 miles from the PSEGS site. It occupies a typical perspective of the landscape of the Chuckwalla Valley. The two power towers would protrude above the horizon, attract attention, and produce strong "line" contrasts. Form contrasts are moderate, and color and texture contrasts are weak as seen from the westbound freeway. The two visible power towers would create a major modification of the existing character of the Chuckwalla Valley as seen from the freeway. The PSEGS would be a strongly contrasting feature in form, line, and color within the landscape visible from KOP-13A due to the vertical presence of the towers and illumination of the receivers. The Project would become the major focus of viewer attention as seen from KOP-13A.

Taken as a whole, visual impacts to KOP-13A resulting from the PSEGS are expected to be significant and unmitigable, per BLM VRM standards, guidelines, and best management practices (BMPs). Thus, the PSEGS's effect on visual resources from KOP-8A would not be brought into conformance with Class III Interim VRM objectives and would remain adverse.

There are no reasonable or feasible mitigation measures that could be applied that would reduce the visual contrast of the two 750-foot-tall power towers protruding above the horizon. Vegetative screening and/or architectural screening of these features is impractical. The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and

VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape.

KOP-15A (Replaces KOP-10): Palen McCoy Wilderness Area

KOP-15A is in the Palen McCoy WA, approximately 6 miles from the PSEGS site. The image was captured in 2010 by AECOM and the vantage point was used as KOP-10A in the PSPP EIS. The elevation from this the vantage point provides an excellent perspective of the southern Chuckwalla Valley. This vantage point is one mile from an access road into the WA. Receptors would be dispersed recreationists seeking solitude and vistas.

The strong contrasts of form, line, and color created by the PSEGS would create a major modification of the existing character of the Chuckwalla Valley and Palen Dry Lake, as seen against the backdrop of the Chuckwalla Mountains. The Project would be a new dominant feature of the landscape visible from this WA. The Project would change the existing visual character of the viewshed. The two 750-foot-tall solar power towers would be the most visually noticeable elements, and from this view at KOP-15A, the elevated air cooled condensers and heliostat fields would be highly visible too. The Project would change the character of the area, dominate the view, and become the major focus of viewer attention as seen from KOP-15A.

The visual character in the area of Palen Dry Lake would change from open space desert to that of a developed, industrial landscape. The overall visual impact of the PSEGS would completely alter the existing undeveloped scenic quality of this characteristic landscape, and convert it to an industrialized solar-electric landscape. However, some viewers may see the development of a solar resource facility as a point of positive visual interest. Taken as a whole, visual impacts to KOP-15A resulting from the Project would be significant and unmitigable, per BLM VRM standards, guidelines, and best management practices (BMPs). Therefore, the PSEGS would not comply with the definition of Class III, above, as seen from KOP-15A in the Palen / McCoy Wilderness Area.

There are no reasonable or feasible mitigation measures that could be applied that would reduce the visual contrast of the two 750-foot-tall power towers, the elevated air cooled condensers, or the expansive and highly reflective heliostat fields. Vegetative screening and/or architectural screening of these features is impractical, if not impossible. Thus, the PSEGS's effect on visual resources from KOP-15A would not be brought into conformance with Class III Interim VRM objectives and would remain adverse. The Project's incorporation of the above described APMs (i.e., TRANS-6, VIS-1, VIS-2, VIS-4, VIS-5, and VIS-6), would reduce impacts associated with the length and intensity of glint and glare, and the degree of color contrast in the landscape. However, they would not totally eliminate the contrast of the PSEGS in the landscape due to the vertical presence of the towers and illumination of the receivers.

KOP-17A: Bradshaw Trail

The Bradshaw Trail's vantage point (SR-17) is located in the SW 1/4, SE 1/4, Sec. 9, T8S, R20E SBB&M. SR-17 is 22.8 miles from the nearest power tower. The elevation of KOP-17A is 589 feet AMSL, or 32 feet topographically superior to the PSGES site. The PSEGS is not visible from KOP-17A.

Impacts to BLM Wilderness Areas and Joshua Tree National Park

The four wilderness areas in the vicinity of the proposed site have no developed trails, or adjoining parking/ trailheads, or other visitor use facilities. These areas are generally steep, rugged mountains. Visitor use within the wilderness areas appears to be very light, although BLM has no visitor use counts. Observations by staff and Law Enforcement Rangers indicate only 100 to 200 hikers per year within the wilderness areas. Visitation to the desert peaks listed by the Sierra Club Angeles Chapter is discussed in PA/FEIS Chapter 3 (page 3.13-4). More popular is vehicle camping along roads that are adjacent to the wilderness areas. RV camping near wilderness areas, with associated hiking, OHV use, photography, sightseeing, etc. accounts for up to 2,000 visitors per year.

Figures 3.19-3 and 3.19.3a show designated wilderness areas within the PSEGS viewshed. Views of the PSEGS from special designations generally would be in mountainous areas that offer elevated viewpoints similar to KOP-4A, KOP-10A and KOP-11A. Users of these areas would be able to view the Project, but opportunities for solitude and unconfined recreation would not be greatly impacted due to the distance of the PSEGS from the wilderness area. Where the Project would be readily visible in mountainous areas beyond five miles, the level of contrast would remain moderate because the project would not dominate the view as a whole. While the proposed power tower receiver lights may be noticeable, they would not overwhelm or dominate the panoramic views or more visually appealing elements of the scene, such as the rugged mountain ranges, the open sky, and the undisturbed portions of the valley floor. For portions of designated wilderness within 5 miles of the site, the level of contrast would be strong because the PSEGS could dominate views of the valley, and would not in compliance with VRM objectives, as discussed above for KOP-10A and KOP-11A. The portion of JTNP where the PSEGS could be visible would be within the background visibility zone and does not contain visitor-serving facilities such as hiking trails, campgrounds or picnic areas. For the reasons above, impacts to the visitor experience to BLM wilderness and JTNP would be minor.

Decommissioning

The purpose of decommissioning is to remove project-related structures and infrastructure so that affected lands could naturalize. However, until landform and vegetative restoration is achieved, adverse visual impacts would be similar to those described in the operation-phase impacts, because large areas would be devoid of desert scrub vegetation. The impacts of decommissioning would be somewhat reduced in intensity, however, as compared to construction, because the contrast created by the power towers, power block structures and solar fields would be removed. The contrast in the design elements of form and line would remain. These impacts would be reduced through the APMs, which would incorporate techniques to reduce areas of disturbance, revegetate impacted areas, and select plant species appropriate for the surrounding landscape (see VIS-2 and VIS-4 for additional details). Furthermore, upon closure of the facility, the Applicant would implement the Project's Decommissioning and Reclamation Plan, along with numerous proposed impact avoidance and minimization measures (see Appendix C, APMs BIO-8, BIO-22, VIS-4, and VIS-4). These efforts would ensure the visual impacts of decommissioning are minor and short-term and the site is returned to a condition that is visually compatible with the surrounding characteristic landscape.

4.18.3 Cumulative Impacts

PSEGS

Impacts resulting from construction, operation, maintenance and decommissioning of the PSEGS could result in a cumulative effect on visual resources when combined with the incremental effects of past, other present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for visual resources consists of the I-10 corridor (where visual impacts could be synergistic), and locations from which a viewer could see the PSEGS along with views of other projects (where visual impacts could be additive). This geographic scope of cumulative impacts analysis was established based on the natural boundaries of the affected resource, i.e., potential shared viewsheds, and not on jurisdictional boundaries. Potential cumulative effects on visual resources could occur during the proposed 34-month construction period (e.g., from cumulative construction disturbances), during the projected lifespan of the PSEGS (e.g., project form, line, color, and/or texture contrast with the landscape, including contrasts from glint and glare), or result from closure and decommissioning (e.g., until restoration efforts return the landscape to its original condition).

Existing conditions within the area of cumulative effects analysis reflect a combination of the natural condition and the effects of past actions and are described in Chapter 3. Direct and indirect effects of the PSEGS are analyzed above. Direct and indirect effects of the alternatives described in Chapter 2 are analyzed in the PSPP PA/FEIS (see page 4.18-18 et seq.). Past, present, and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.4, *Cumulative Scenario Approach*. These include the Blythe, Genesis, Rice, Palen, Desert Sunlight, Chuckwalla, Eagle Crest Pump Storage, Nextera McCoy, Desert Quartzsite, and Mule Mountain Soleil solar power projects and associated generation-tie lines. These solar power projects are expected to result in synergistic visual impacts for travelers along I-10, as well as visual impacts to dispersed recreational users in the surrounding areas.

Visual changes as a result of other projects in the cumulative scenario could be located within the line of sight for travelers along I-10 viewing the project. Related cumulative effects are analyzed in the PSPP PA/FEIS (see page 4.18-20 et seq.). This analysis applies equally to the PSEGS and has not been supplemented.

Dispersed wilderness users, including recreational users, in the Palen-McCoy Mountains, Chuckwalla Mountains, JTNP, and Joshua Tree Wilderness surrounding the project —due to their elevated position and access to unencumbered, panoramic views of the valley below—could experience both additive and synergistic impacts in the cumulative scenario. Related cumulative effects are analyzed in the PSPP PA/FEIS (see page 4.18-21 et seq.). This analysis applies equally to the PSEGS and has not been supplemented.

Reconfigured Alternative 2 (Option 1 and Option 2)

Direct and indirect effects of Reconfigured Alternative 2 (Option 1 and Option 2) are analyzed in the PSPP PA/FEIS (see page 4.18-18 et seq.). Reconfigured Alternative 2 would have a similar effect with respect to visual resources. Visual resource impacts would remain adverse for this alternative. However this alternative would not include the power towers and associated visual resource impacts.

No Action Alternative A

If No Action Alternative A was selected, the PSEGS would not occur at the project site. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project. Nonetheless, because no existing or foreseeable projects are located within the cumulative effects area of the project site, no cumulative impacts to visual resources would be created.

4.18.4 Summary of Mitigation Measures

Described in Chapter 2, *Proposed Action and Alternatives,* the Applicant has incorporated into the PSEGS nearly all of the mitigation measures identified in the PSPP PA/FEIS. These measures, referred to in this Draft SEIS as APMs are included in Appendix C. Specific modifications to these measures to further address the potential effects of the PSEGS are shown below with added text underlined and deleted text in ~~strikethrough.~~ Please see Appendix C for a full description of these measures. No additional measures are feasible or would appreciably reduce the residual visual resource impacts, after incorporation of the APMs.

VIS-1: Surface Treatment of Project Structures and Buildings. 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, when possible, 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. Grouped structures shall be painted the same color to reduce visual complexity and color contrast.

VIS-3: Temporary and Permanent Exterior Lighting. ~~To~~ In addition to measures identified in VIS-6, and 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 if allowed by FAA regulations and if the cost is no more than $1 million for both towers); d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with federal and state OSHA and with local policies and ordinances. The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval, and simultaneously to the County of Riverside and NPS Joshua Tree NP (see VIS-6) for review and comment a lighting mitigation plan.

VIS-4: Project Design. To the extent possible, the project owner will 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 will be based on the following factors:

> …
>
> 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 as determined in VIS-1. 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.
>
> …
>
> Signs: The use of signs and project construction signs shall be minimized. Necessary signs shall be made of nonglare materials and utilize unobtrusive colors. The reverse sides of signs and mounts shall be painted or coated by using the most suitable color selected from the BLM Standard Environmental Color Chart or other sources approved by BLM to reduce color contrasts with the existing landscape; however, placements and design of any signs required by safety regulations must conform to regulatory requirements.
>
> 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. The visual color contrast of graveled surfaces shall be reduced with approved color treatment practices.
>
> Construction: No paint or permanent discoloring agents shall be applied to rocks or vegetation to indicate surveyor construction activity limits. All stakes and flagging shall be removed from the construction area upon completion of construction and disposed of in an approved facility.

VIS-5 (Previously Identified as BLM-VIS-1): Power Block and Power Tower Appearance. In addition to the measures identified in VIS-1, the project owner shall paint power blocks structures and other vertical construction shadow gray as shown on the BLM Color Chart. The solar tower may be left untreated concrete. The backs of ~~solar troughs~~ heliostat mirrors shall also be ~~color treated to minimize color contrasts~~ designed to minimize reflectivity.

TRANS-6: Heliostat Positioning Plan. The project owner shall prepare and implement a Heliostat Positioning Plan that would minimize potential for human health and safety hazards and bird injury or mortality from solar radiation exposure. The Heliostat Positioning Plan shall accomplish the following:

…

2) Assess the effects of the potential glint and glare associated with the proposed heliostat positions and movements determined through Item 1. The assessment shall quantify the potential glint and glare effects and determine public health, safety, and visual impacts at KOPs identified in the PSEGS Draft SEIS. In addition, the analysis shall identify the maximum project-related glint and glare that could be experienced by motorists along I-10. The assessment shall be conducted by qualified individuals using appropriate and commonly accepted software and procedures. The assessment results must be made available to the BLM in advance of project approval. If the project design is changed during the siting and design process such that substantial changes to glint and glare effects may occur, glint and glare effects shall be recalculated, and the results shall be made available to BLM.

4.18.5 Residual Impacts after Mitigation Measures were Implemented

Even with adherence to all APMs, residual impacts to visual resources would remain. Section 4.18.6 provides a description of these residual impacts.

4.18.6 Unavoidable Adverse Impacts

1. Visual impacts to surrounding viewer groups (all KOPs, except 17A) from the single, strong vertical power tower forms (2 total) that would contrast strongly with the natural forms colors, lines and texture of the landscape. For example that is a strong tower line contrast with the horizon lines. Additionally, the brilliant white light of the receiver at the top of the towers would present a unique and strong color contrast that generally would be very conspicuous, even at long distances as seen by the casual observer.

2. Visual impacts to surrounding viewer groups (all KOPs, except 17A) from sunlight reflected off of the heliostat mirrors (glare).

3. Visual impacts due to the general level of visual contrast of the PSEGS in the landscape, and non-conformance with Interim VRM Class III objectives.

4. Unavoidable and adverse cumulative impacts for travelers along I-10 and dispersed recreational users in the Palen/McCoy, Big Maria, and Little Maria Mountains and wilderness.

4.19 Impacts on Water Resources

4.19.1 Impact Assessment Methodology

The water resources impact assessment methodology described in PSPP PA/FEIS Section 4.20.1 (p. 4.19-1) was used to analyze the PSEGS in this Draft SEIS, which evaluates the proposed natural gas pipeline to the south and shifted gen-tie line route, each of which is located outside the area specifically considered in the PSPP PA/FEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in the Section 4.19.2 of the PSPP PA/FEIS (see page 4.19-18 et seq., and page 4.19-20 et seq., respectively). Potential cumulative impacts for all alternatives are analyzed in Section 4.19.3, below based on an updated cumulative scenario.

This analysis is based, in part, upon information from the following sources: the *Revised Plan of Development* (POD) submitted February 8, 2013 by Palen Solar III, LLC to the Bureau of Land Management (Palen Solar III, LLC, 2013); the *Petition to Amend* for PSEGS submitted on December 17, 2012 by Palen Solar Holdings LLC (Palen Solar Holdings, LLC, 2012); the Developed Conditions Drainage Assessment for PSEGS (VTN Consulting, 2013); and Stormwater Pollution Prevention Plan or SWPPP (CH2MHill, 2013).

4.19.2 Direct and Indirect Impacts of the PSEGS

The PSEGS differs from the PSPP in ways that result in different potential effects on water resources. For example, the PSEGS would:

1. Reduce water use during operation from up to 300 acre-feet per year (AFY) to 201 AFY;
2. Reduce water use during construction from 1,917 AFY (total of 5,750 acre feet) to 400 AFY (total of 1,130 acre feet);
3. Eliminate the large drainage control channels;
4. Reduce the number and acreage of evaporation ponds from up to two 4-acre ponds for each power block (as was proposed for the PSPP) to two 2-acre ponds for both Unit 1 and Unit 2 of the PSEGS;
5. Eliminate Therminol from the site; and
6. Eliminate the land treatment units (LTUs) that had been proposed for the treatment of Therminol-contaminated soils.

Groundwater

The PSEGS would use up to 10 groundwater wells. The amount of groundwater required during construction is estimated to be approximately 1,130 acre feet. During operations, an estimated 201 acre-feet per year (AFY) of groundwater would be required(Palen Solar Holdings LLC, 2012).

Currently, the Chuckwalla Valley Groundwater Basin (CVGB) balance is positive by approximately 2,608 AFY. Total inflow of approximately 13,719 AFY is slightly greater than the estimated outflow of approximately 11,111 AFY. Approximately 400 AFY is attributed to subsurface outflow to the adjacent Palo Verde Mesa Groundwater Basin (PVMGB). The groundwater withdrawals proposed under the PSEGS would have an impact on the balance in the CVGB. However, pumping for the PSEGS would not exceed net average recharge to the basin. The groundwater table in this area is greater than 100 feet bgs as reported in the PSPP PA/FEIS (p. 4.19-26) and the BLM has no information suggesting that this has changed since the PSPP PA/FEIS was issued. Based on the current understanding of the hydrogeology and existing wells, it is unlikely that groundwater pumping for the PSEGS would cause any nearby wells to go dry or rendered unusable by declining groundwater levels. However, some groundwater level- decline would be expected that could affect nearby wells. Monitoring of water levels in nearby wells as described in the APMs would identify any such impacts (see Appendix C, SOIL&WATER-4).

Groundwater Drawdown Concerns

Effects on Existing Wells

Discussed more fully in PSPP PA/FEIS Section 4.19.2 (p. 4.19-1 et seq.), drawdown imposed by a well on another nearby well can have adverse effects. The extent and type of well interference experienced by an affected well is dependent on hydrogeologic conditions in the aquifer as well as the characteristics of the affected well. A range of potential impacts that could result to existing wells from the drawdown are identified on PSPP PA/FEIS page 4.19-4. The PSEGS could cause the same types of effects.

Effects on Phreatophytes and Halophytes

As discussed on PSPP PA/FEIS pages 4.19-4 and 4.19-5, phreatophyte trees (such as mesquite, ironwood, and palo verde) have deep root systems that can extend tens of feet below the ground surface to the underlying water table. In addition, wet playas can harbor halophyte plant communities that depend on a shallow water table for their moisture. Lowering of the water table below the root depth of these plants could result in stress or death. The nearest potential wetland or halophyte communities would be near Palen Dry Lake, approximately 3.6 miles from the proposed site. A preliminary estimate of the PSPP-related groundwater level decline (i.e., approximately 0.2 to 0.6 feet at the end of 33 years of operation) is provided on PSPP PA/FEIS page 4.19-5. The PSEGS could cause the same types of effects, but to a lesser extent since anticipated water requirements would be less. The PSEGS is not anticipated to substantially alter water levels due to groundwater production beneath this area.

Effects on Surface Water Features

Potential impacts to surface water features from drawdown resulting from the are discussed on PSPP PA/FEIS page 4.19-5. The PSEGS could cause the same types of effects as the PSPP, but likely to a lesser extent since the PSEGS's anticipated water requirements would be less. PSPP PA/FEIS Section 3.20, Water Resources, describes surface water features in the area, including one spring (Corn Spring), two perennial springs (McCoy Spring and Chuckwalla Spring), and other surface water sites such as Ford Dry Lake Playa, Palen Dry Lake, Coxcomb wash, tenejas, and wildlife water guzzlers (see, e.g., PSPP PA/FEIS p. 3.20-19). Drawdown caused by the PSEGS would be expected to have a negligible effect on the contribution of groundwater to Corn Spring, which appears to derive its water from precipitation falling onto the Chuckwalla Mountains, and movement of groundwater under pressure along an historic fault that bisects the mountains. Drawdown caused by the PSEGS also would be expected to have a negligible effect on the contribution of groundwater to the McCoy and Chuckwalla springs, which are located farther from the site, 19 miles and 16 miles from the site, respectively. For the same reasons discussed on PSPP PA/FEIS page 4.19-5, the PSEGS's impacts on Ford Dry Lake Playa and Palen Dry Lake would be minor to negligible. Coxcomb wash, tenejas, and wildlife water guzzlers in the project vicinity would not be affected by drawdown as they are not influenced by groundwater levels.

Ground Subsidence

As described in the PSPP PA/FEIS (p. 4.19-6), soils particularly susceptible to subsidence include compressible clays in a confined aquifer system. Compressible clays are not anticipated to be present onsite in a thickness sufficient to result in subsidence as a result of groundwater drawdown under the PSEGS. Based on the geologic/sedimentary characteristics of the CVGB, and on a lack of measured subsidence during previous, historic drawdown events, the potential for subsidence from groundwater level declines is believed to be remote. Thus based on the site conditions and historical subsidence rates, the PSEGS is not expected to contribute appreciably to regional subsidence. Nonetheless, as set forth in Appendix C (Soil & Water-4), the Applicant has proposed groundwater monitoring program to evaluate and mitigate for any potential impacts to groundwater levels during project construction and operation.

Colorado River-Related Concerns

As discussed in the PSPP PA/FEIS (p. 4.19-6), stakeholder groups have expressed concern that project-related groundwater use could affect the adjacent PVMGB by inducing flows from the Colorado River into that basin-. The concern is that any resulting use of Colorado River water without an entitlement would be illegal. However, available data do not substantiate or support this hypothesis. Any groundwater flow from the Colorado River through the PVVGB into the northern PVMGB under the present irrigation management regime is disputed by the Palo Verde Irrigation District (PVID), whose drains prevent any such underflow from occurring (PVID, 2012).[1]

[1] Descriptions and figures showing PVID's drains and related infrastructure also are available in publicly accessible PVID documents, such as the April 2002 Hydrology and Water Quality Technical Report for the Palo Verde Irrigation District Land Management, Crop Rotation and Water Supply Program, which was included as Appendix B to the Draft Environmental Impact Report for the Proposed Palo Verde Irrigation District Land Management, Crop Rotation, and Water Supply Program (PVID, 2002).

Groundwater Quality

Groundwater quality could be affected by the PSEGS through percolation of process wastewater in the evaporation ponds. As stated in the PSPP PA/FEIS (p. 4.19-6), given the probable low permeability sediment and dispersion or dilution and/or interference from other producers, and the design of the evaporation ponds constructed with berms to reduce the potential of mobilization of soil into the water table, it is unlikely that vertical migration of poor quality water would degrade higher quality portions of the aquifer. This also is true of the PSEGS. The two 2-acre evaporation ponds proposed for the PSEGS would be designed with a primary and secondary liner system and an intervening leak collection and recovery system. Each would be designated as Class II Surface Impoundment Waste Management Unit (WMU) and would meet state regulatory the requirements (27 CCR §§20200 et seq).

Surface Water

Surface Water Hydrology and Erosion

The PSEGS would generally limit grading activities to roads, foundation areas, and other work area. The heliostat fields would remain largely free of grading. The PSEGS would require an estimated 200,000 cubic yards of cut and fill (Palen Solar Holdings LLC, 2012). Figure 4.19-2 shows the grading and drainage plan based on the new Stormwater Pollution Prevention Plan (SWPPP) prepared for the PSEGS. No drainage channels would be required to control site runoff. To address potential erosion, the Applicant proposes the use of erosion and sedimentation control structures as part of the facility design and drainage facilities (see Appendix C, APMs GEN-5, CIVIL-1 and CIVIL-4 for additional details). During construction, portions of the site would be graded. The intent of grading would not be to level the site, but rather to prepare the site for installation of the heliostats and ease future maintenance activities. As such, the existing depressions for the drainages would remain, and natural drainage waters are expected to continue to occupy these ephemeral washes. Any grading required would be designed to promote storm water flow across the site as it occurs in a pre-project condition where possible. In addition, with implementation of the Stormwater Pollution Prevention and Plan (CH2MHill, 2013) and the BMPs therein the construction activities would not have a substantially adverse impact.

The Development Conditions Drainage Assessment (VTN Consulting, 2013) provides the difference in runoff volume and peak flows between the existing and post-construction of the PSEGS. The assessment used 12 cross sections throughout the PSEGS site to measure the flow rates and volumes leaving the site after a storm event. Based on the peak flow rate summary for multiple 24-hour events (100-year, 50-year, 25-year, 10-year events), the runoff volume was estimated to increase under project conditions by 1.93 percent (100-year event), 2.2 percent (50- and 25-year events), and 1.67 percent (10-year event). This flow increase would be spread out along the northern boundary of the site, and not concentrated in any single location (VTN Consulting, 2013). This dispersed, slight increase in the flow would have a minor impact on site hydrology, would be reduced by the implementation of the APMs described in Appendix C, and is not expected to have a negative effect on any downstream properties.

Alteration of Drainage Patterns

As noted above and described in Chapter 2, PSEGS-related grading activities would be limited to certain roads, development pads, and work areas. The majority of the site would maintain original grades, and substantial alteration of drainage patterns is not proposed. In limited areas, such as the power blocks, switchyard, heliostat assembly area, and administrative areas, the stormwater management system would include diversion channels, bypass channels, or swales to direct run-on flow from up-slope areas and run-off flow through and around each facility. The Applicant also proposes a number of measures to control runoff, minimize erosion, and accommodate sheet flow from all storm events less than or equal to a 100-year, 24-hour storm event (Palen Solar Holdings LLC, 2012). In addition, the Applicant would prepare and implement a detailed Drainage, Erosion, and Sedimentation Control Plan, the details of which are provided in Appendix C, SOIL&WATER-1.

Flood Hazards

PSEGS facilities could be exposed to the risk of floods and be damaged from a significant flood event. The depth of the heliostat pylons is estimated to not exceed 12 feet in penetration depth in order to provide adequate lateral support, which would also guard against the potential for scour during a significant flood event (Palen Solar Holdings LLC, 2012).

Surface Water Quality

The PSEGS would affect surface water quality during the construction phase and the operation and maintenance phase. Similar to the PSPP, the potential threats to surface water quality during construction include erosion and associated increases in sediment loads to adjacent streams and washes and spills of hydrocarbon fuels and greases, solvents, paints, or concrete. The Applicant would implement the BMPs in the 2013 SWPPP to reduce impacts related to soil erosion and sediment transport offsite during and post-construction.

Over the long-term, operation and maintenance of the PSEGS would generate the process wastewater stream, including the reverse osmosis reject water. It would have similar treatment and disposal mechanisms as the PSPP, hence similar impacts would be expected for the PSEGS with the exception of the use of Therminol VP-1. Terminal VP-1 is described in PSPP PA/FEIS Table 4.11-1 (p. 4.11-7) as heat transfer fluid consisting of 26.5 percent biphenyl and 73.5 percent diphenyl ether. It is moderately toxic, a physical irritant, and a Class III-B combustible liquid. The PSPP would require its use; the PSEGS would not. Therefore, there would be no risk that the PSGES could cause Therminol releases into surface waters. Further, the PSEGS involves recycling and reuse of process water, including use of a thermal evaporator, which would reduce the volume of the process wastewater routed to the evaporation ponds.

The PSEGS wastewater would be disposed in two 2-acre evaporation ponds that would be located in the common facilities area. The evaporation ponds would be constructed in accordance with Waste Discharge Requirements (WDRs) from the Colorado River Basin Regional Water Quality Control Board.

Similar to the PSPP, decommissioning of the PSEGS is expected to result in adverse impacts related to water resources similar to construction impacts: work could result in potential increases in sediment loads to adjacent streams and washes; and/or accidental spills of hydrocarbon fuels and greases and other materials associated with motorized equipment and construction work.

4.19.3 Cumulative Impacts

PSEGS

Impacts resulting from construction, operation, maintenance and decommissioning of the PSEGS could result in a cumulative effect on hydrologic resources –when added to other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for hydrologic resources consists of the CVGB and, for surface waters, the area within the watershed boundary. Potential cumulative effects on hydrologic resources could occur at any point during the construction, operation and maintenance, or decommissioning of the PSEGS. The cumulative scenario described in Section 4.1 and illustrated in Figure 4.1-1 identifies several additional solar development projects that are underway or anticipated in the vicinity of the site.

Construction of the PSEGS is expected to result in the short-term adverse impacts described above. It is expected that some of the cumulative projects described in Section 4.1 that are not yet built may be under construction the same time as the PSEGS. In addition, it is expected that others of the cumulative projects may be operational at the same time as the PSEGS. As a result, there could be substantial long-term cumulative impacts during operation of these projects related to hydrologic water resources.

PSPP PA/FEIS Section 4.19.3 (p. 4.19-21 et seq.) provides a detailed analysis of the types of cumulative effects upon water resources that could result from the PSPP, in combination with other projects pending or underway at that time. While the combination of projects comprising the cumulative scenario have changed since publication of the PSPP PA/FEIS, the cumulative implications of these projects upon the region's water resources would not be appreciably different. As such, implementation of the PSEGS could cause or contribute to substantial short-term and long-term cumulative impacts during construction and operation related to: soil erosion, geomorphology, basin balance, groundwater levels, groundwater quality, surface water hydrology and surface water quality.

Reconfigured Alternative 2

The cumulative effects of the Reconfigured Alternative 2 (Options 1 and 2) for water resources would be substantially similar to those referenced above, and consistent with those detailed in Section 4.19.3 of the PSPP PA/FEIS. The revisions to the cumulative scenario described in Section 4.1 and illustrated in Figure 4.1-1 would not appreciably affect the conclusions reached in the PSPP PA/FEIS 9p. 4.19-18 et seq.) regarding Reconfigured Alternative 2 (Options 1 and 2).

No Action Alternative A

Since the PSEGS would not be built, no contribution to any cumulative impacts on water resources would occur. However, since the requested ROW area is located within the Riverside East SEZ, the CDCA Plan amendment decisions in the Solar PEIS ROD identify it as suitable for any type of solar energy development and it is reasonable to expect that the BLM would receive a subsequent ROW application for a different solar project.

4.19.4 Summary of Mitigation Measures

As described in Chapter 2, *Proposed Action and Alternatives,* and provided in Appendix C, the Applicant has incorporated into the PSEGS many of the mitigation measures that were identified in the PSPP PA/FEIS. These measures, referred to in this Draft SEIS as APMs, represent a full range of avoidance and minimization measures available to reduce water resources impacts. For example, SOIL&WATER-1 would result in the development and implementation of an agency-approved Drainage Erosion and Sedimentation Control Plan; SOIL&WATER-2 would result in properly permitted and legally compliant groundwater wells that comply with all Riverside County water well standards for the life of the proposed wells; SOIL&WATER-3 relates to water use during construction and operation; SOIL&WATER-4 relates to groundwater level monitoring, mitigation and reporting; SOIL&WATER-5 relates to compensation of the owners of nearby wells determined to have been affected by PSEGS activities; and SOIL&WATER-6 relates to WDRs. Based on the Applicant's commitment to implement these and the other SOIL&WATER APMs identified in Appendix C, no new mitigation measures are recommended.

4.19.5 Residual Impacts after Mitigation Measures were Implemented

As no mitigation measures are recommended, there would be no change in PSEGS impacts resulting from mitigation.

4.19.6 Unavoidable Adverse Impacts

No unavoidable adverse impacts would be expected.

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4.20 Impacts on Wildland Fire Ecology

4.20.1 Impact Assessment Methodology

The wildland fire ecology impact assessment methodology described in PSPP PA/FEIS Section 4.20.1 (p. 4.20-1) was used to analyze the PSEGS in this Draft SEIS, including the additional 22.43 acres of Sonoran creosote bush scrub, desert dry wash woodland, and unvegetated ephemeral dry wash that are part of the PSEGS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.20.2 (pp. 4.20-2, 4.20-3). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.20.3 below). As described in PSPP PA/FEIS Section 3.22, the primary causes of fire in the affected area are lightning and vehicles. This section evaluates direct and indirect impacts of the PSEGS related to wildland fire ecology, especially as they may be caused by changes in human use of the affected area.

4.20.2 Direct and Indirect Impacts of the PSEGS

Potentially increased fire hazard impacts associated with the PSEGS could be created during the approximately 34-month construction period, approximately 30- to 50-year operation and maintenance period, and during site closure and decommissioning activities. Although new elements have been introduced for the PSEGS relative to the PSPP (such as the new natural gas line, shift in the location of a portion of the proposed gen-tie line, and two proposed power towers), the general location and proposed approach to construction, operation and maintenance, and decommissioning remain substantially the same as identified for the PSPP. Therefore, PSEGS-related wildland fire ecology hazards and related effects would be substantially the same as identified for the PSPP. These are briefly described below.

Construction

Construction of the PSEGS would cause direct effects relating to wildland fire ecology. The PESGS would require 400 AFY for each year of the construction phase. This relates to fire hazard in that water use may promote the vigor of groundwater dependent vegetation with an associated reduction in wildfire hazards. Groundwater pumping to supply the construction-related water needs of the PSEGS also could cause impacts to groundwater dependent vegetation (i.e., phreatophytes) that are susceptible to desiccation if their deep roots cannot follow receding groundwater sources. The water demand for the PSEGS also could decrease the survivorship of desert dry wash woodland vegetation and increase the susceptibility of on-site and off-site woodland habitat to wildland fire, although this potential effect cannot be quantified. Proposed site grading (approximately 0.2 million cubic yards (MCY)) would increase the area that would be susceptible to invasion by exotic weeds; this effect would be carried into the operation and maintenance and decommissioning phases.

Construction of the PSEGS also would cause indirect effects relating to wildland fire ecology. Such effects would be similar to those of the PSPP and include the potential spreading of invasive plants, especially annual grasses, and related increased potential for wildfires, which can result in substantial ecological change (see PSPP PA/FEIS Section 4.20.2, p. 4.20-1 et seq.).

The probability of a wildfire to occur as a result of PSEGS construction would be low due to the moderate-risk site conditions, normally extremely patchy fuel distribution, dry climate, and the proposed level of heavy equipment use. However, during extreme weather conditions, a grass fire originating at the site could spread up the slopes of the adjacent McCoy Mountains or spread toward other projects out of control and pose a risk to life and property, and the risk of fire as a result of PSEGS construction therefore is considered substantial.

The Applicant is proposing to implement the vegetation management measures identified in APM BIO-14 (see Appendix C), which include a weed management plan, to minimize the potential for weed colonization and dominance on the proposed site by including implementation of a risk assessment of the invasive weed species currently known within the study area, procedures to control their spread on site, and procedures to help minimize the introduction of new weed species. Implementation of these measures would not completely eliminate the introduction of noxious weeds into the study area, but would minimize their introduction and control their spread on the site.

In addition, the required Construction Fire Prevention Plan (CFPP) (Appendix C, APM WORKER SAFETY-1), on-site fire protection and response infrastructure (Appendix C, APM WORKER SAFETY-7) and the Worker Environmental Awareness Program (WEAP) (Appendix C, APM BIO-6) would significantly reduce the risk of wildland fires associated with the PSEGS and ensure that appropriate response mechanisms are in place should the need for them arise. The proposed CFPP, entitled *Draft Fire Safety Plan* (PSH, 2013) and included as Appendix F, provides measures for fire prevention during construction and operation of the PSEGS. These include instruction on the use and storage of flammable and combustible materials and liquids, protocols for working with compressed gas, restrictions on the locations and conditions under which hot work may occur, direction regarding fire inspection and training, and list of and specifications for fire protection equipment, among others. The WEAP would designate responsibilities and actions to be taken in the event of a fire or other emergency during construction. The WEAP would be provided to the BLM and local fire departments for approval before the Applicant receives a Notice to Proceed to construction. The WEAP would help reduce the risk of wildfire on and off site during construction. The above measures would minimize the potential for a wildfire ignition to occur as a result of PSEGS-related construction activities and the presence of personnel on site.

Operation and Maintenance

Operation and maintenance of the PSEGS could cause direct and indirect effects relating to wildland fire ecology. The potential impacts described in PSPP PA/FEIS Section 4.20.2 (p. 4.20-1 et seq.) for the PSPP are equally applicable to the PSEGS, with similar fire hazards from electrical transmission lines and high winds increasing the potential for wildfire ignition and spread. No new or different operations and maintenance-related effects have been identified for the PSEGS. As with the PSPP, key elements of the fire protection systems for operation and maintenance of the solar plant site include a fire protection water system for protection of the administrative and maintenance building and portable fire extinguishers. The fire protection water system and fire water storage tank would be located on the solar plant site near the administrative and maintenance area. Their particulars are described in Chapter 2 of this Draft SEIS.

Annual projected water use (and associated groundwater pumping) is projected to require 201 AFY for each year of the operation and maintenance phase of the PSEGS. This would have similar benefits to groundwater dependent vegetation as those described for construction.

Climate change is expected to result in a small but general increase in temperature, and also in an increase in the frequency of extreme weather events that could generate wildfires, such as increased frequency of drought and heat waves or wetter seasons that increase fuel loads, during operation and maintenance of the PSEGS.

The APMs provided in Appendix C would apply to all phases of the PSEGS, including the operation and maintenance phase.

Decommissioning

Impacts from decommissioning would be similar to those described in the construction section. The APMs provided in Appendix C would apply to all phases of the PSEGS, including decommissioning.

4.20.3 Cumulative Impacts

PSEGS

Cumulative impacts associated with wildland fire ecology were analyzed in detail in PSPP PA/FEIS Section 4.20.3 (p. 4.20-3 et seq.), and those details and the full methodology behind the analysis were provided in PSPP PA/FEIS Appendix I, *Biological Resource-related Cumulative Impacts*. As discussed in the PSPP PA/FEIS, the incremental impacts of that project could result in a cumulative effect on wildland fire risk in combination with past, present, or reasonably foreseeable future actions. The same is true for the PSEGS.

The geographic scope of the cumulative effects analysis for fire resources related to the PSPP examined a study area that included 2,800 square miles (about 1,792,000 acres) in eastern Riverside County. This also is true for the PSEGS. As discussed in the PSPP PA/FEIS, fire response is dependent upon services that would be fully or partly provided by the Riverside County Fire Department (RCFD). The nearest RCFD stations identified in the PSPP PA/FEIS (p. 4.11-3) remain valid for the PSEGS, with the two nearest RCFD stations to the proposed site located off of I-10 approximately 10 miles west. The Lake Tamarisk Station (#49) is located at 43880 Lake Tamarisk Dr. in Desert Center and the Terra Lago Station (#87) is located at 42900 Golf Center Parkway in Indio. Units from the two closest RCFD stations would arrive at the site within 14 minutes after dispatch when responding to incidences of fire. Although this information was provided in the context of the PSPP, the BLM has received no information indicating that estimated response times have changed since the PSPP PA/FEIS was issued. Potential cumulative wildfire effects could occur over the course of 40 or more years, encompassing the entire lifespan of the PSEGS, from construction and operation and maintenance, through closure and decommissioning.

As described in the PSPP PA/FEIS, potential cumulative impacts to wildland fire ecology reflect a combination of the natural condition and the effects of past actions. The natural condition of the affected environment is described in Chapter 3, *Affected Environment*, of this Draft SEIS and direct and indirect effects of the PSEGS and alternatives are analyzed above and in the PSPP (regarding the direct and indirect effects of Option 1 and Option 2 of Reconfigured Alternative 2, see PSPP PA/FEIS p. 4.20-2 et seq.). Past, present and reasonably foreseeable future actions making up the cumulative scenario are identified in Section 4.1.3 of this Draft SEIS. Any of the cumulative projects that would use or store liquefied petroleum gas, install or operate transmission lines, and/or use equipment (including motor vehicles) that could spark or otherwise provide an ignition source could combine to cause or create a cumulative impact to wildland fire ecology. Additionally, the increased human presence and disturbance caused by the construction, operation and overall development that would occur under cumulative scenario could advance the rate of invasion by non-native vegetation and, thereby, contribute to fire fuel-loading that would burn with higher flames and hotter temperatures.

Development of the site for utility-scale power generation would preclude some OHV use, thereby decreasing cumulative wildfire risks associated with recreational uses.

Reconfigured Alternative 2

Option 1

Although Option 1 would involve different acreages and a different configuration than the other alternatives, the generating capacity and construction and operation-related vehicle use would be similar among all of the action alternatives. Because Option 1 would occupy more land than the PSEGS, it would have an incrementally greater cumulative contribution to wildland fire ecology impacts than the PSEGS because of the increased area in which exotic weeds could establish on the site prior to and following site decommissioning.

Option 2

Although Option 2 would involve different acreages and configurations than the PSEGS or the PSPP, the generating capacity and construction and operation-related vehicle use would be similar among all of the action alternatives. Because Option 2 would occupy slightly more land than the PSEGS, it would have an incrementally greater cumulative contribution to wildland fire ecology impacts relative to the PSEGS, with the difference being the slightly increased area in which exotic weeds could establish on the site prior to and following site decommissioning. Consequently, the cumulative effects of Option 2 to wildland fire ecology would be roughly comparable those of the PSEGS.

No Action Alternative A

To the extent that No Action Alternative A would not result in development of the site, no contribution to a cumulative impact on wildland fire ecology would occur. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan Amendment that identifies the area as suitable for any type of solar energy development would be in effect for future projects, and this land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts to wildland fire ecology of a nature and type to be evaluated when sufficient detail in known about any such future proposal.

4.20.4 Summary of Mitigation Measures

The mitigation measures identified in PSPP PA/FEIS Section 4.20.4 (pp. 4.20-4, 4.20-5) were incorporated with some modifications into the PSEGS as APMs, which are provided in Appendix C. Applicant-proposed revisions to the PSPP mitigation measures address the following differences of the PSEGS relative to the PSPP: the PSEGS's proposed reduction in site grading, elimination of reengineered water conveyance channels (affecting desert dry wash woodland and unvegetated ephemeral dry wash vegetation communities), and the changing legal statuses of rare plants based on the scale of data produced by regional project surveys.

The APMs set forth in Appendix C minimize or avoid adverse impacts related to wildland fire ecology. Specific APMs that are relevant to wildland fire ecology that protect vegetation resources in the affected area include: BIO-6 (Worker Environmental Awareness Program (WEAP)), BIO-14 (Weed Management Plan), WORKER SAFETY-1 (Construction Fire Prevention Plan); and WORKER SAFETY-7 (Fire Protection/Response Infrastructure). Implementation of these measures would reduce the incidence of invasive annual grasses and forbs on the PSEGS site that contribute to fire fuels, increase worker awareness of potential fire hazards, and provide a coordinated fire response program that can respond to potential fire outbreaks. No additional mitigation measures are recommended.

4.20.5 Residual Impacts after Mitigation Measures were Implemented

Because no mitigation measures are recommended, there would be no change in the impacts described above resulting from mitigation.

4.20.6 Unavoidable Adverse Impacts

Despite implementation of APMs as part of the PSEGS, the increased vehicle use required to access the area for construction, operation, and maintenance and changes in recreational vehicle use would increase the likelihood of wildfires in the vicinity of the PSEGS to a slight, but unknown degree.

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4.21 Impacts on Wildlife Resources

4.21.1 Impact Assessment Methodology

The wildlife resources impact assessment methodology used in PSPP PA/FEIS Section 4.21.1 (p. 4.21-1) was used to analyze the PSEGS in this Draft SEIS. The analysis of direct and indirect impacts associated with Reconfigured Alternative 2 (Option 1 and Option 2) and No Action Alternative A can be found in PSPP PA/FEIS Section 4.21.2 (pp. 4.21-19 to 4.21-22). The discussion of cumulative impacts for these alternatives has been revised as necessary in this Draft SEIS to reflect the updated cumulative scenario (see Section 4.21.3 below).

4.21.2 Direct and Indirect Impacts of the PSEGS

The direct and indirect impacts to wildlife resources for the PSEGS are expected to be similar to the impacts described for the PSPP in the PSPP PA/FEIS. These discussions have been updated as necessary in the sections below. The following elements of the PSEGS that represent modifications to the PSPP are potentially relevant to wildlife resource impacts:

- Change from solar thermal parabolic trough technology to power tower technology.
- Construct two power tower receivers, or Solar Receiver Steam Generator (SRSG) towers, each measuring approximately 750 feet tall with a 10-foot lightning rod with associated daytime and nighttime safety lighting.
- Reduce the fenced project area relative to the PSPP by 572 acres, from 4,366 acres to approximately 3,794 acres. Total the project disturbance area including the natural gas corridor, distribution yard, and revised gen-tie corridor is approximately 3,899 acres. This includes habitat areas as well as developed areas, as discussed in Section 3.18, *Vegetation Resources*.
- Reduce anticipated water use relative to the PSPP both during construction (from 5,750 acre feet to 1,130 acre-feet) and operation (from 300 acre feet per year (AFY) to 201 AFY).
- Maintain natural hydrology across the site and beyond, via minimal grading required for erecting heliostats versus complete site grading and planning necessary for solar trough mirrors.
- Mow instead of grade the site and, thereby avoid the elimination of vegetation and associated wildlife habitat that would occur under the PSPP.
- Relative to the PSPP, reduce from four, 4-acre evaporation ponds to two, 2-acre ponds, only one of which would be used at any single point in time.
- Leave in place the existing SCE 161 kV transmission line to the edge of the site.
- Re-route the redundant telecommunication line to the gen-tie line route, where it would be buried.

The PSEGS would lie completely within the disturbance footprint analyzed in the PSPP PA/FEIS, with the exception of 1) a rerouting of the gen-tie line that extends 1,128 feet west, beyond the western end of the previously-proposed gen-tie; and 2) an extension of the natural gas pipeline from the existing So Cal Gas pipeline south of I-10 north to the solar facility. The gen-tie line extension comprises 18.9 acres and lies immediately adjacent (125 feet on center) to the Desert Sunlight project gen-tie line, which currently is under construction. At its southern extent, it enters SCE's Red Bluff Substation, currently under construction. The gen-tie ROW is 120 feet wide, although only the tower pads and stub roads or access road would actually be subject to surface disturbance. The natural gas pipeline extension corridor would be 50 feet wide, approximately 3,000 feet long, and comprise 3.3 acres.

The PSEGS Applicant has committed to implementing the mitigation measures identified in PSPP PA/FEIS Section 4.14 as APMs to avoid and minimize direct and indirect impacts to wildlife resources (see Appendix C). These APMs have been considered in the impacts analysis that follows.

Desert Tortoise

Direct Impacts

Evidence from 2009, 2010, and 2013 surveys, as described in Section 3.23, *Wildlife Resources*, shows that few desert tortoise occupy the PSEGS site. It is possible that one or more desert tortoise could be detected during pre-construction/ clearance surveys or related work. As a result, construction, operation and decommissioning of the PSEGS could have direct and/or indirect impacts on this species. A description of direct impacts to desert tortoise from the portions of the PSEGS that overlap with the PSPP can be found in PSPP PA/FEIS Section 4.21.2.

The gen-tie line reroute and natural gas line extension associated with the PSEGS overlay approximately 22.2 acres, all of which are considered desert tortoise habitat, except for the portion of the natural gas line that traverses I-10 (Table 4.21-1). The gen-tie line comprises 18.9 acres, but because surface disturbance would only occur on the tower pads, pulling sites, and access or stub roads, as well as the burial trench for the telecommunications line, the amount of surface disturbance would be less than 18.9 acres. At this time, however, the pads are not engineered, so the actual acreage of disturbance would be assumed to be 18.9 acres, of which some much smaller percentage would comprise a permanent loss of habitat. Both the tower pads around the transmission towers and the gas line acreage are considered to be "permanent" for purposes of habitat compensation calculations, even though these areas would be restored and available for tortoise use following construction. Due to long vegetation recovery times in the desert, any areas that are similarly disturbed are actually semi-permanent relative to habitat quality and therefore are considered to be permanently impacted for the purposes of habitat compensation.

The only part of the gen-tie line reroute and natural gas line extension that travels through a DWMA is the gen-tie line, which travels through the northern edge of the Chuckwalla DWMA, between I-10 and the Red Bluff Substation. The remainder of the gen-tie line and the entire natural gas line extension area is in Category III habitat. The natural gas line is in a DWMA Continuity WHMA and the gen-tie line is sufficiently close, given the coarse scale of the NECO Plan maps, to be included in this WHMA. The PSEGS is in the Colorado Desert Recovery Unit, and both linear facilities partially intersect the Chuckwalla Critical Habitat Unit (CHU). Critical

TABLE 4.21-1
AREAS OF DIRECT AND INDIRECT WILDLIFE HABITAT IMPACTS

Project Element	Project Feature	Area (Acres)		Impact Timing	
				Phase I	Phase II
Total Project Footprint					
Direct Impact (Primary Project Disturbance Area)[a]	Common/CLA Fenced Area	218.0		218.0	0
	Solar Field Fenced Area	3,575.5		624.5	2,951.0
	Access Road (Disturbed Area)	1.0		1.0	0
	Gen-Tie Corridor	100.8		100.8	0
	Gas Line and Secondary Access Road Corridor	3.56		3.56	0
Indirect Impact (Secondary Project Disturbance Area)	***Subtotal Direct Impact***	***3898.86***		***944.3***	***2,951***
	Indirect Impact (Private Land)	39.7		0	39.7
	Indirect Impact (SCE 161kV Corridor)	11.7		11.7	0
	Subtotal Indirect Impact	***51.4***		***11.7***	***39.7***
Total Area (Acres)		**3,946.7**		**959.56**	**2,990.7**
Desert Tortoise Impacts					
Project Site Fenced Area	Common/CLA - Critical Habitat	103.2		103.2	0
	Solar Field Area - Critical Habitat	100.0		48.7	51.3
	Common/CLA - Suitable Habitat	114.8		114.8	0
	Solar Field Area - Suitable Habitat	3,475.5		575.8	2,899.7
Access Road	Access Road - Critical Habitat	0.9		0.9	0
	Access Road - Suitable Habitat	0.1		0.1	0
Gen-Tie Corridor	Critical Habitat	20.8		20.8	0
	Suitable Habitat	80.1		80.1	0
Gas Line and Secondary Access Road Corridor	Critical Habitat	0.9		0.9	0
	Suitable Habitat	2.36		2.36	0
Indirect Impact (Secondary Project Disturbance Area)	Private Land: Suitable Habitat	39.7		0	39.7
	SCE 161kV Corridor: Critical Habitat	3.7		3.7	0
	SCE 161kV Corridor: Suitable Habitat	8.0		8.0	0
Total Area (Acres)		**3,946.8**		**956.1**	**2,990.7**
Mojave Fringe-toed Lizard Impacts					
Project Site Fenced Area	Stabilized & Partially Stabilized Desert Dunes	186.8		0	186.8
	Non-Dunes	1,264.7		6.5	1,258.2
Gen-Tie Corridor	Non-Dunes	27.7		27.7	0
Gas Line and Secondary Access Road Corridor	Stabilized & Partially Stabilized Desert Dunes	0		0	0
	Non-Dunes	0		0	0
Indirect Impacts (Secondary Project Disturbance Area)	Private Land: Non-Dunes	39.7		0	39.7
Total Area (Acres)		**1,518.9**		**34.2**	**1,484.7**

TABLE 4.21-1 (Continued)
PSEGS DISTURBANCE AREA AND ASSOCIATED WILDLIFE IMPACTS

Project Element	Project Feature	Area (Acres)		Impact Timing	
				Phase I	Phase II
Aeolian Sand Corridor Impacts (Zones)					
Project Site Fenced Area	Zone II	227.3		0	227.3
	Zone III	901.2		5.3	895.9
Gen-Tie Corridor	Zone III	16.9		16.9	0
Indirect Impacts (Secondary Project Disturbance Area)	Private Land: Zone II	2.9		0	2.9
	Private Land: Zone III	36.8		0	36.8
Total Area (Acres)		**1,185.1**		**22.2**	**1,162.9**
Jurisdictional Waters Impacts					
Project Site Fenced Area	Desert Dry Wash Woodland	192.3		5.1	187.2
	Unvegetated Ephemeral Dry Wash	161.3		4.5	156.8
Gen-Tie Corridor	Desert Dry Wash Woodland	4.6		4.6	0
	Unvegetated Ephemeral Dry Wash	0.4		0.4	0
Gas Line and Secondary Access Road Corridor	Desert Dry Wash Woodland	1.25		1.25	
	Unvegetated Ephemeral Dry Wash	0.47		0.47	
Indirect Impacts (Secondary Project Disturbance Area)	Private Land: Unvegetated Ephemeral Dry Wash	0.47		0	0.47
	SCE 161kV Corridor: Desert Dry Wash Woodland	0.03		0.03	0
	SCE 161kV Corridor: Unvegetated Ephemeral Dry Wash	0.04		0.04	0
Total Area (Acres)		**359.1**		**14.7**	344.5

NOTES:
[a] Primary Project Disturbance Area is the area within the Proposed PSEGS ROWs on which impacts would occur
[b] Secondary Project Disturbance Area is the area beyond the Proposed PSEGS ROWs on which impacts would occur

SOURCE: Galati, 2013

habitat overlaps part of the east-west portion and all of the north-south portion of the gen-tie line reroute; it overlaps the natural gas line only south of I-10, near the existing SoCal Gas line. Acreages of overlap with DWMA and the CHU are shown in Table 4.21-2. Where applicable, acreage for the gen-tie line that was already accounted for in the PSPP has been subtracted from the PSEGS acreage in Table 4.21-2.

As described for the PSPP, desert tortoise would be translocated from the PSEGS fenced solar fields and common area; the 161 kV “channel” also would be fenced to preclude trapping tortoises. Accordingly, continued maintenance inside the solar facility would not harm tortoises. There would be no biologically significant changes in impacts to designated critical habitat as compared to the PSPP. While the common area for the PSEGS is sited in critical habitat, the PSPP also had designed full surface disturbance for this portion of the site that overlaps critical habitat. However, 4.6 additional acres would be disturbed near I-10.

TABLE 4.21-2
ESTIMATED ACRES OF DESERT TORTOISE HABITAT DISTURBED FOR THE PSEGS LINEAR FACILITIES

Location and Habitat Type	Total Modified Project	Phase 1	Phase 2	Total Minus Permitted Project
Modified Gen-Tie[a]				
Total	18.9	18.9	0.0	4.5
Critical Habitat	18.1	18.1	0.0	3.7
Outside Critical Habitat	0.8	0.8	0.0	0.8
DWMA	2.3	2.3	0.0	1.5
Outside DWMA	16.6	16.6	0.0	2.99
Gas Pipeline				
Total	3.3	0.0	3.3	Not Applicable
Critical Habitat	0.9	0.0	0.9	Not Applicable
Outside Critical Habitat	2.4	0.0	2.4	Not Applicable
DWMA	0.0	0.0	0.0	Not Applicable
Outside DWMA	0.0	0.0	0.0	Not Applicable

NOTE:
[a] Because PSEGS-proposed gen-tie has been shifted 1,128 feet west, where it parallels the original gen-tie route, most of the acreage was already accounted for in the original BO for the PSPP, with the additional acreage only in the east-west portion, plus a small amount south of I-10. The permitted gen-tie intersected critical habitat for the entire north-south portion and the DWMA south of I-10.

SOURCE: BrightSource Energy, Inc., 2013

Indirect Impacts

A description of the indirect impacts to desert tortoise from the PSPP can be found in PSPP PA/FEIS Section 4.21.2. These impacts are expected to be the similar for the PSEGS with the following exceptions, some of which are expected to reduce impacts to desert tortoises:

- The PSEGS footprint would be 3,899 acres, a decrease of 572 acres in the direct loss of desert tortoise habitat relative to the PSPP.
- The PSEGS would construct two 2-acre evaporation ponds, which is a 50 percent reduction relative to the PSPP's proposal to construct four 4-acre ponds. The reduced number and size of netted evaporation ponds (APM BIO-26) would provide less attraction to ravens, which prey on desert tortoises. Attraction of coyotes to the area is not anticipated to change due to the PSEGS.
- The PSEGS would largely preserve current site hydrology, rather than rerouting flows as was proposed for the PSPP. As a result, off-site desert washes and associated desert dry wash woodland habitat generally would remain unaffected by the PSEGS. Indirect effects to offsite plants also would be lessened because of the preservation of many substrates and much of the vegetation onsite, with the resulting effect of decreased dust deposition offsite.
- The PSEGS proposes to mow the site, which has the potential to increase weed populations; however, the degree to which this might occur is unknown. Sahara mustard (*Brassica*

tournefortii) was noted as "prevalent" on the site (AECOM 2009b), although an estimate of weed density and distribution was not provided. The required weed management plan would be modified, as necessary, to accommodate weed monitoring related to ongoing mowing and heliostat washing activities, as well as the preservation of the site's hydrology.

Impacts of Relocation/Translocation

The potential impact to desert tortoise associated with relocation/translocation were fully described in PSPP PA/FEIS Section 4.21.2. As described in the APMs (see Appendix C), the PSEGS Applicant will prepare a Desert Tortoise Relocation/Translocation Plan (APM BIO-10) that includes measures to avoid and minimize adverse impacts to resident and translocated desert tortoises. This plan would be reviewed and approved by CDFW, USFWS, BLM and CEC staff, and would be implemented to move any tortoises detected during clearance surveys. The Desert Tortoise Relocation/Translocation Plan would: 1) analyze whether relocation or translocation is an appropriate action; 2) identify and prioritize potentially suitable locations for translocation; 3) evaluate desert tortoise handling and transport considerations (including temperature) and animal health considerations; 4) describe translocation scheduling, site preparation and management; and 5) specify monitoring and reporting activities for evaluating success of translocation.

Movement and Habitat Connectivity of Desert Tortoise and Other Wildlife

Movement and habitat connectivity of desert tortoise and other wildlife related to the site were described in PSPP PA/FEIS Section 4.21.2 and remain applicable to the PSEGS. Since the Biological Opinion was issued for the PSPP, the USFWS identified priority connectivity corridors for desert tortoise in solar energy development zones (USFWS, 2012). The agency's connectivity analysis identified no priority connectivity corridors for desert tortoise in the Project vicinity. The type of disturbance resulting from the rerouted gen-tie line and natural gas line extension would not disrupt habitat connectivity, especially given that these features would not impede tortoise movement and given the existing and ongoing projects in the immediate vicinity of these linear facilities.

As described for the PSPP, three large culverts under I-10, occurring along the existing washes in the project area, provide desert tortoise and other wildlife safe passage under I-10 in a north-south direction across the project area (PSPP PA/FEIS, p. 4.21-7). Although these I-10 major culverts would remain open to desert tortoise movement, the PSEGS would disrupt local movement patterns by impeding movement or forcing tortoises to circumnavigate the Project site.

Three Multi-Species WHMAs occur in the general PSEGS 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 vicinity of the site). The PSEGS could impede wildlife movement in these corridors by obstructing connectivity, and on a population level could impede gene flow for desert tortoises.

Mojave Fringe-toed Lizard

The PSEGS has been designed to reduce impacts on sand transport through the placement of the project and removal of wind fences. In the PSPP PA/FEIS it was determined that the project could be configured to avoid the sand transport area, and thus reduce direct impacts to sand dune habitat in the area. This alternative is described in the PSPP PA/FEIS as Reconfigured Alternative 2. The PSEGS has been designed to fit within the Reconfigured Alternative 2 footprint and therefore is expected also to avoid the sand transport area. The PSEGS also proposes to eliminate the 30-foot wind fences, which in the original PSPP plan of development were expected to create “sand shadows” that could isolate dunes downwind of the site from the sand supply necessary to maintain dune sand in volumes that support wildlife habitat. With the changes incorporated into the PSEGS, indirect impacts to sand transport and off-site dune habitat will be avoided. Thus, effects to off-site Mojave fringe-toed lizard habitat through the previously described interruption of a regional sand transport corridor and creation of a sand shadow have been substantially reduced or eliminated under the PSEGS.

The PSEGS would directly impact 186.8 acres of stabilized and partly stabilized desert dunes and an additional 1,332.1 acres of non-dune habitat that may support Mojave fringe-toed lizard in the northeastern portion of the Project Disturbance Area. Thus, the Project may impact a total of 1,518.9 acres of active wind-blown sand with relatively shallow sand deposits and areas of deeper and more active vegetated sand dunes (Table 4.21-1). However, the PSEGS would not interrupt the regional wind-borne sand transport corridor that moves sand southeast and east along the Chuckwalla Valley and toward the Colorado River. Project-related impacts on sand transport corridors and related dune habitats are further analyzed in Draft SEIS Section 4.14. The inclusion of the rerouted gen-tie line and natural gas line extension in the PSEGS would not impact sand transport or habitat for Mojave fringe-toed lizard.

Western Burrowing Owl

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 or near the solar plant site or linear facilities. Burrowing owls and their active burrows within the Project Disturbance Area could be crushed or displaced during construction activities. Indirect impacts to burrowing owls during construction and operation can include increased road kill hazards, modifications to foraging and breeding activities from rearrangement or loss of habitat, and loss of prey items and food sources due to a decreased number of fossorial (burrowing or digging) small mammals from lost or degraded habitat.

Golden Eagle

The PSEGS would impact approximately 3,946.7 acres of golden eagle foraging habitat within the NECO planning area. Potential impacts to avian species related to PSEGS noise, effects of lighting and nocturnal collisions with proposed facilities, solar flux impacts from solar mirrors and the SRSG towers, collision hazards from power lines, and potential for bird electrocution are discussed under Additional Impacts, below. The PSEGS is not expected to result in direct disturbance to nesting golden eagles. PSPP PA/FEIS Section 4.21.2 includes a full discussion of potential indirect impacts to golden eagle.

Special Status and Migratory Birds

PSEGS-related impacts to avian species would include the displacement of non-breeding resident and migratory birds from the site. These birds would be directly affected by the loss of desert dry wash woodland, unvegetated ephemeral dry wash, and Sonoran creosote bush scrub. The 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 periods. Indirect impacts include increased road kill hazard from operations traffic, and collision with mirrors, the SRSG tower, or wires; -; increased predation from ravens; and disturbance from operations.

The increased loss of desert dry wash woodland under the PSEGS (204.37 acres, as shown in Table 3.18-1) relative to the PSPP (148 acres, as shown in PSPP PA/FEIS Table 3.18-1) would cause a greater loss of high quality breeding and foraging habitat for resident breeding birds at the site, which include loggerhead shrike, California horned lark, and Le Conte's thrasher, among others. These resident species in particular would be affected by the loss of the cover, foraging and nesting opportunities provided by the structurally diverse and relatively lush desert dry wash woodland.

The PSEGS would employ mowing to maintain low vegetation cover and would not require complete site grading, which was proposed for the PSPP. This change would result in a substantial retention of passerine bird foraging opportunities on the Project site compared to the PSPP.

The direct loss of active bird nests or young is regulated by the federal Migratory Bird Treaty Act and Fish and Game Code section 3503, which protects active nests or eggs of California birds. Direct and indirect impacts to nesting birds are addressed by APMs (see BIO-8 in Appendix C). The additional impact of the rerouted gen-tie line and natural gas line extension to breeding birds is considered nominal. Potential impacts to avian species related to PSEGS noise, effects of lighting and nocturnal collisions with Project facilities, solar mirror and SRSG tower effects, collision hazards from power lines, and potential for bird electrocution are discussed under Additional Impacts, below.

Desert Kit Fox and American Badger

As described for the PSPP, potential impacts to the desert kit fox and American badger from the PSEGS would include the loss of foraging and denning habitat, fragmentation and degradation of adjacent habitat, crushing or entombing of animals in dens, increased risk of road kill hazard from construction traffic, and disturbance/harassment of individuals. Indirect impacts include disturbance from increased noise and lighting; and the introduction and spread of invasive weeds. Direct and indirect impacts on these species are addressed by APMs that have been proposed by the Applicant to facilitate kit fox and American badger relocation and minimize disease threats (see BIO-17, Appendix C). The implementation of Mitigation Measure WIL-1 will further minimize impacts to these species.

The typical practice for solar projects has been to exclude desert kit foxes from project areas during pre-construction using “passive relocation” methods (i.e., by closing burrows, forcing foxes to locate to new off-site burrows). In the absence of protective measures the PSEGS has the potential to worsen the CDV outbreak by raising kit fox stress levels and causing increased susceptibility to infection, causing increased movement of diseased animals thereby increasing the spread of disease into new areas, or placing healthy kit foxes into contact with off-site infected animals.

Burro Deer

Due to its reduced size compared to the PSPP, development of the PSEGS within the Palen watershed would have similar, if slightly reduced, impacts on the range and regional movement of burro deer to those described in the PSPP PA/FEIS.

Couch’s Spadefoot Toad

As part of the PSPP, the Palen site was assessed for evidence of ponding that could support breeding of this species (ponding that would last about 9 days) and these areas were not observed. Therefore, the PSEGS is not expected to impact this species or its habitat.

Bats

With the exception of potential impacts of SRSG towers on bats, potential impacts to special-status bats are identical to those as described in the PSPP PA/FEIS (Section 4.21). Potential impacts of the SRSG towers to bats are described under *“Solar Flux” Effects from Solar Mirrors and the SRSG Tower*, under Additional Impacts, below. Nelson’s Bighorn Sheep

The Society for Conservation of Bighorn Sheep has recommended a 1-mile buffer from the upper edge of any solar development to the base of the mountains to protect spring foraging habitat. The PSEGS site is over 1 mile from the base of either the Chuckwalla Mountains or Palen Mountains. Barriers between the Chuckwalla Mountains and the Project site (I-10) and the Palen Mountains and the Project site (sand dunes) further limit the availability and usefulness of the PSEGS site as spring foraging habitat. The PSEGS would not directly affect habitat within any NECO connectivity corridors or WHMAs, and would not conflict with Desert Bighorn Sheep Conservation goals and objectives outlined in the NECO planning area.

Additional Impacts

Construction, Operation and Maintenance and Decommissioning Noise

Potential impacts to common and special-status wildlife species related to PSEG Project noise during construction, operation and maintenance, and decommissioning are the same as those described in the PSPP PA/FEIS. See PSPP PA/FEIS Section 4-21 (pp. 4.21-13 to 4.21-14) for a discussion of potential noise-related impacts to wildlife. A complete analysis of operation noise impacts is provided in Section 4.9.

Nighttime Lighting and Nocturnal Collisions

As discussed in the PSPP PA/FEIS, night lighting plays a substantial role in avian and bat collision risk because lights can attract nocturnal migrant songbirds and other wildlife species. Major bird kill events have been reported at lighted communications towers and ground lighting can also influence bird and bat behavior. With the exception of SRSG tower lighting for compliance with FAA and DOD requirements, potential PSEGS impacts to common and special-status wildlife species related to nighttime lighting during construction, operation and maintenance, and decommissioning are the same as those described in the PSPP PA/FEIS. The potential impact mechanisms by which the SRSG tower may attract migratory birds and preferred lighting systems that minimize bird attraction are discussed in the PSPP PA/FEIS and are relevant to the discussion of potential impacts for the PSEGS.

Consistent with FAA and DOD requirements, night lighting is required on structures greater than 200 feet in height. The SRSG towers would exceed 750 feet above grade level, thus, temporary day and night safety lighting would be required during construction once the structure exceeds 200 feet above ground level (AGL), and permanent lighting is required during operation and maintenance, until the decommissioning phase until the tower is below 200 feet AGL. The required SRSG tower lighting would use flashing lights (strobes) on towers that are believed to result in less bird aggregation, and, by extension, lower bird mortality, than the use of steady-burning lights.

The FAA will likely require strobe beacons at the top of the SRSG tower and at intermediate levels on the body of the structure (FAA, 2000). Night lighting would increase the visibility of the SRSG towers to bird and bat species, thereby reducing the potential for nighttime collisions with the SRSG towers. The use of strobe lighting on the towers would reduce the potential for nighttime bird aggregations and reduce impacts to nighttime bird movement (Ghering and Kerlinger, 2007). PSEG Project adherence to FAA guidelines for lighting as required by APM TRANS-8 (see Appendix C) would help minimize nighttime impacts to birds and bats.

"Solar Flux" Effects from Solar Mirrors and the SRSG Tower

Two proposed solar fields of 1,643 acres (Unit 1) and 1,883 acres (Unit 2) would be populated with a system of heliostats mounted on pylons. Each heliostat assembly would be composed of two reflective mirrors, each approximately 12 feet high by 8.5 feet wide. The heliostats are sources of bright light that would reflect solar radiation to each of the SRSG towers. The PSPP analysis of impacts from Heat Collecting Elements based on parabolic mirrors is similar to the potential impact that heliostats could have on avian species. Specifically, elevated heat and sunlight, termed "solar flux", above 4 Kw/m^2 from mirrored heliostat surfaces is considered potentially unsafe to birds near heliostats and near the solar energy concentration area of the SRSG towers. Because reflective solar facilities present a new and relatively un-researched risk from lighting hazards, the impacts of reflected light on birds are not known. The most relevant study on effects of this technology on birds was conducted in the early 1980s at Solar One, a 10 megawatt, 80 acre pilot solar concentrating facility in the Mojave Desert. Bird mortality consisted of collisions with structures, primarily heliostats, and burning from flight through "standby points" near the solar tower (McCrary et al., 1986). Seventy birds of 26 species died during 40 weeks of field work.

In an April 3, 2013, comment letter for the proposed Hidden Hills Solar Energy Generating System, the USFWS expressed concerns about the effects of exposure to elevated levels of solar flux on birds at an individual, local, and population level, citing the potential that elevated levels of solar flux generated by the focused energy from the heliostats may burn and damage exposed skin and feathers (USFWS, 2013). The USFWS (2013) additionally postulated additional hazards in that:

> "degradation of eyesight could result in additional injury and mortality through collisions with objects in the environment (including the tower and heliostats), or preventing them from being able to perform normal life functions, including feeding, territorial maintenance, migration, or evading predators. In addition, mirrored heliostats and other infrastructure may cause injury and mortality by collisions."

At this time, the direct and indirect effects of avian exposure to elevated solar flux are not known. In describing the technology, the USFWS acknowledges that technical studies are needed before the impacts of solar tower technology on avian and bat species physiology and behavior are fully understood (USWFS, 2012). Based on the present understanding of risks that solar tower power technology poses to avian species, there is a potential risk that bats or diurnal birds could be subject to temporary or permanent blinding or other physiological harm, or fatality from interactions with the solar flux. As an APM, the Avian Protection Plan (APM BIO-16A, *Avian and Bat Habitat Compensation*; APM BIO-16B, *Avian Enhancement and Conservation Measures*; APM BIO-16C, *Avian and Bat Surveys, Monitoring and Adaptive Management*) would provide the information needed to determine if operation of the PSEGS poses a collision risk for birds, and would provide an adaptive management strategy to mitigate impacts to lower levels for the PSEGS and future solar tower technology projects.

Collisions with Mirrors and Transmission Facilities

The potential hazards presented by bird collisions with mirrors and transmission facilities are discussed in the PSPP PA/FEIS and have not changed appreciably for the PSEGS. Bird fatalities resulting from mirror collisions were anticipated as a potential project effect in the PSPP PA/FEIS. During both day and night, migratory water birds may interpret the reflective mirror fields as large waterbodies. The species of birds that could be affected from collisions with mirrors cannot be known with certainty, though recent findings at the Desert Sunlight solar facility near Joshua Tree National Park in Riverside County suggest that common and special-status water birds may be susceptible to collisions with mirrors. On May 8, 2013 the facilities reported a dead Yuma clapper rail and several grebes to the USWFS.

As an APM, the Avian Protection Plan (APM BIO-16A, *Avian and Bat Habitat Compensation*; APM BIO-16B, *Avian Enhancement and Conservation Measures*; APM BIO-16C, *Avian and Bat Surveys, Monitoring and Adaptive Management*) would provide the information needed to determine if operation of the PSEGS poses a collision risk for birds, and would develop an adaptive management strategy in coordination with the wildlife agencies (i.e., USFWS, CDFW) and BLM to mitigate impacts to lower levels for the PSEGS and future solar tower technology projects.

Electrocution

As discussed in the PSPP PA/FEIS, large raptors such as the golden eagle, red-tailed hawk, and great-horned owl can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. This happens most frequently when a bird attempts to perch or take off from a structure with insufficient clearance between these elements. Electrocution-related hazards to avian species were analyzed in the PSPP PA/FEIS and no new impacts were identified for the PSEGS. See PSPP PA/FEIS Section 4-21 (p. 4.21-17) for a discussion of potential electrocution hazards to avian species. Project adherence to the most recent Avian Power Line Interaction Committee (APLIC) guidelines for transmission line design, as proposed for the PSPP and required by APM BIO-8 (Appendix C) would help reduce the risk of avian electrocution.

Evaporation Ponds

The PSEGS would include two, 2-acre evaporation ponds, only one of which would be used at any single point in time. The wastewater from the each power block would be transported to the evaporation ponds by truck. One truck trip a day from each power block is anticipated to be sufficient for this purpose. The two 2-acre evaporation ponds would be located in the common facilities area and designed with a primary and secondary liner system and an intervening leak collection and recovery system (LCRS). The evaporation ponds would be designated as Class II Surface Impoundments Waste Management Units (WMU) and will meet the requirements of the California Code of Regulations (27 CCR §§20200 et seq). The reduced size of the ponds under the PSEGS could lessen the related impacts to wildlife species that were discussed in the PSPP PA/FEIS, and no new impacts were identified for the PSEGS. APMs including pond netting to prevent access by wildlife have been indentified to address potential impacts to wildlife resources from evaporation ponds (see BIO-26 in Appendix C).

4.21.3 Discussion of Cumulative Impacts

PSPP PA/FEIS Appendix I includes an analysis of cumulative impacts from past, present, and reasonably foreseeable future actions to special-status wildlife, plants, and movement corridors. Foreseeable projects within the NECO planning area also are presented in PSPP PA/FEIS Appendix A, Figure 4.21-1. These impacts are further summarized in Table 4.21-3. An updated cumulative scenario is presented in Section 4.1 of this Draft SEIS.

PSEGS

Construction and operation of the PSEGS would cause adverse impacts to many wildlife resources within the Chuckwalla Valley and the NECO planning area. These include: Mojave fringe-toed lizard; desert tortoise; wildlife movement and connectivity; golden eagle; burrowing owl; American

TABLE 4.21-3
CUMULATIVE IMPACTS TO SELECTED WILDLIFE RESOURCES FROM THE PROJECT[a]

Wildlife Resource	Impact
Desert Tortoise	Contributes to cumulative loss of low to moderate value desert tortoise habitat (0.15% to 0.2 habitat value, 3.7% to 0.3 habitat value, 2.5% to 0.4 to 0.5 habitat value, and 0.02% to 0.6 to 0.7 habitat value) from future projects in the NECO planning area.
Mojave Fringe-Toed Lizard	Contributes substantially to cumulative loss of Mojave fringe-toed lizard habitat in the Chuckwalla Valley (24.3% of all impacts from future projects, Table 14). The PSEGS contribution to fragmentation and indirect impacts increases the already fragmented distribution of the Mojave fringe-toed lizards, and increase the risk of extirpation of isolated populations within the Chuckwalla Valley.
Western Burrowing Owl	Contributes 0.9% to cumulative loss from future projects within the NECO planning area. Also contributes indirect impacts.
Golden Eagle	The PSEGS contribution to cumulative loss of foraging habitat within a 140-mile radius of the site: 0.3% Sonoran creosote scrub and 100% loss of dry desert wash woodland. Contributes to cumulative loss of foraging habitat within 10 miles of mountain (nesting) habitat within the NECO planning area: 1.6% of loss of Sonoran creosote bush scrub and 0.3% of desert dry wash woodland. Also contributes to fragmentation and indirect impacts.
Special-Status Birds & Migratory Birds	Contributes 1.0% to cumulative loss of habitat from future projects within NECO planning area, including 0.3% of desert dry wash woodland.
Nelson's Desert Bighorn Sheep	Contributes to 0% of cumulative impacts from future projects within the NECO planning area; 3.7% of total NECO Bighorn Sheep WHMAs; 5.6% of connectivity corridors in NECO.
Desert Kit Fox & American Badger	Contributes 0.9% to cumulative loss of habitat from future projects within the NECO planning area. Also contributes to fragmentation and indirect impacts.
Special Wildlife Management Areas	Wildlife Habitat Management Areas: Contributes to 68% loss of Sonoran creosote scrub habitat from future projects within Palen-Ford WHMA, 73.3% loss of desert dry wash woodland to Palen-Ford WHMA from future projects, and 0% loss of sand dune communities within the Palen-Ford WHMA. Contributes to an approximately 5% loss to the DWMA Connectivity WHMA. No cumulative contribution to habitat loss in Big Maria Mountains WHMA. Desert Tortoise Critical Habitat: Approximately 201[a] acres of the southwestern corner of the site overlaps the northern boundary of the Chuckwalla Desert Tortoise Critical Habitat Area.

NOTE:
[a] At this scale of analysis, there is essentially no difference between the PSEGS and any of the action alternatives.

badger; desert kit fox; LeConte's thrasher and other migratory desert birds. For many wildlife resources, the PSEGS contribution to cumulative effects after APMs would be relatively minor. However, the PSEGS would cause substantial incremental contributions to cumulative impacts to Mojave fringe-toed lizard, desert tortoise habitat loss and connectivity, and other wildlife habitat values when combined with other past, present and reasonably foreseeable future actions in the cumulative area. Because the impacts to individual golden eagles, special status and migratory birds, and bats from solar flux by the solar mirrors and SRGS tower are unquantified, the cumulative contribution to population-level mortality is unknown in the cumulative area.

As discussed in the PSPP PA/FEIS, for the golden eagle, habitat loss from the PSPP contributes to a cumulative loss of foraging habitats in the Chuckwalla Valley and the NECO planning area. At roughly 572 acres smaller in size, the PSEGS would slightly reduce cumulative habitat loss for golden eagle compared to the PSPP. The PSEGS contribution to the cumulative impacts would remain substantial however when combined with the reasonably foreseeable indirect effects of habitat fragmentation from the construction of projects in the cumulative scenario (see Table 4.1-1). The USFWS and others (PSPP PA/FEIS, p. 4.21-23) estimate there are approximately 30,000 golden eagles in the western U.S., down from an estimated 100,000 in the late 1970s. Survey data from 2003 and 2006 to 2008 indicate a decline of 26 percent since 2003. Climate change is also expected to impact golden eagle by increasing drought severity, and CO_2 concentrations are expected to exacerbate the spread of non-native invasive plants, which displace native species and habitats, fuel wild fires, and alter fire regimes. Additionally, the proposed transmission lines for this and other proposed future projects may increase raptor collisions and electrocutions.

Proposed future projects, within 10 miles of all mountains in the NECO planning area, would cumulatively displace over 300,000 acres of Sonoran and Mojave creosote bush scrub and desert dry wash woodland. The PSEGS contribution to the cumulative loss of foraging habitat within the NECO planning area would be adequately addressed by applying APM BIO-16B, which would fund the restoration of degraded habitat with native vegetation to support bird use, reduce regional bird hazards, and support avian research and management efforts.

Reconfigured Alternative 2

Reconfigured Alternative 2 includes two possible layouts referred to as Option 1 and Option 2. Both options would rely on solar trough technology that would not create a solar flux hazard to avian species. Also, significant grading and hydrologic engineering would occur under Reconfigured Alternative 2 that is not part of the PSEGS. Grading would fully remove vegetation from the site (rather than mowing of existing vegetation as proposed under the PSEGS) and wildlife hazards related to evaporation ponds would be relatively higher, as described for the PSPP.

Option 1

The impacts described in the PSPP PA/FEIS for Reconfigured Alternative 2 Option 1 have not changed since publication. Option 1 would disturb approximately 4,366 acres, consisting of 3,817 acres of Sonoran creosote bush scrub, 156 acres of stabilized and partially-stabilized desert dunes, 208 acres of desert dry wash woodland, and 180 acres of unvegetated ephemeral dry wash. This alternative option would be approximately 420 acres larger than the proposed PSEGS, increasing the impacts to natural vegetation communities. Under this option, relative to the PSEGS, approximately 258 additional acres of potential desert tortoise habitat would be impacted. Similarly, the impacts on potential Mojave fringe-toed lizard habitat would increase under this alternative by approximately 128 acres.

Option 2

The impacts described in the PSPP PA/FEIS for Reconfigured Alternative 2 Option 2 have not changed since publication. Option 2 would disturb approximately 4,330 acres, consisting of 3,771 acres of Sonoran creosote bush scrub, 188 acres of stabilized and partially-stabilized desert dunes, 198 acres of desert dry wash woodland, and 168 acres of unvegetated ephemeral dry wash. This alternative option would be approximately 384 acres larger than the proposed PSEGS, increasing the impacts to vegetation communities. Under this option, relative to the PSEGS, approximately 190 additional acres of potential desert tortoise habitat would be impacted. Similarly, the impacts on potential Mojave fringe-toed lizard habitat would increase under this alternative by approximately 115 acres.

No Action Alternative A

If No Action Alternative A was selected, the PSEGS would not occur at the project site. However, since the ROW application area is located within the Riverside East SEZ, the CDCA Plan amendment decisions made in the Solar PEIS ROD that identify the area as suitable for any type of solar energy development would be in effect for future projects. This includes prioritization of solar energy development in the SEZ. It is likely, therefore, that this site in the future would be developed as a solar energy project. Such development could result in cumulative impacts similar to those of the PSEGS or PSPP; however insufficient detail is known about any potential future solar project on the proposed site to provide a meaningful analysis.

4.21.4 Summary of Mitigation Measures

The PSEGS Applicant has committed to implementing the relevant mitigation measures that were identified in PSPP PA/FEIS Section 4.21.4 as APMs to avoid and minimize direct and indirect impacts to wildlife resources (see Appendix C). The Applicant also has included additional APMs or modified APMs to address impacts unique to the PSEGS (e.g., BIO-16C, regarding avian and bat surveys, monitoring and adaptive management).

In addition, the following measures shall be implemented to reduce or avoid impacts to wildlife species from construction, operation and maintenance, and decommissioning of the PSEGS.

> **WIL-1: American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures.** The project owner shall develop and implement an American Badger and Desert Kit Fox Mitigation and Monitoring Plan (plan). The objective of the plan shall be to avoid direct impacts to the American badger and desert kit fox as a result of construction of the power plant and linear facilities, as well as during project operation and decommissioning. The final plan is subject to review and comment by BLM and revision and approval by the Compliance Project Manager (CPM), in consultation with CDFW. The final plan shall include, but is not limited to, the following procedures and impact avoidance measures:
>
> 1. Describe pre-construction survey and clearance field protocol, to determine the number and locations of single or paired kit foxes or badgers on the project site that would need to be avoided or passively relocated and the number and locations of

desert kit fox or badger burrows or burrow complexes that would need to be collapsed to prevent re-occupancy by the animals.

a. *Pre-Construction Surveys.* Biological Monitors shall conduct pre-construction surveys for desert kit fox and American badger no more than 30 days prior to initiation of construction activities, including pre-construction site mobilization. Surveys shall also address the potential presence of active dens within 100 feet of the project boundary (including utility corridors and access roads) and shall be performed for each phase of construction. If dens are detected, each den shall be classified as inactive, potentially active, or definitely active den.

b. *Monitoring and Protection Measures, Passive Hazing, and Den Excavation.* The plan will include details on monitoring requirements, types and methods of passive hazing, and methods and timing of den excavation, including, but not limited to the following:

   i. Inactive dens. Inactive dens (e.g. inactive dens are dens that are mostly or entirely silted in and ones in which the back of the den can clearly be seen (e.g., the den isn't deep and doesn't curve) that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badger or kit fox.

   ii. Potentially and definitely active dens. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand. If tracks are observed, the 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. If the den is proven inactive then den may be collapsed during whelping season. BLM approval may be required prior to release of badgers on public lands.

   iii. Active natal/pupping dens. If an active natal den (a den with pups) is detected on the site, the BLM, CEC, and CDFW shall be contacted within 24 hours to determine the appropriate course of action to minimize the potential for animal harm or mortality. The course of action would depend on the age of the pups, location of the den on the site (e.g. is the den in a central area or in a perimeter location), status of the perimeter site fence (completed or not), and the pending construction activities proposed near the den. A 500-foot no-disturbance buffer shall be maintained around all active dens. The denning season for American badger is approximately March to August, and for desert kit fox the denning season is approximately Mid-January to pup independence (typically by June). If the den is active during the whelping season, even if pups are not seen, disturbance is not allowed. Active natal/pupping dens will not be excavated or passively relocated.

c. *Exception for American badger.* In the event that passive relocation techniques fail for badgers, outside the denning season, or during the denning season if individual badgers can be verified to not have a litter, then live-trapping by a CDFW and CPM approved trapper is an option that may be employed to safely perform active removal with approval on a case by case basis by the CPM, BLM, and CDFW In the event live-trapping would be employed as a last resort, a live-trapping plan would be submitted to the CPM for review and approval in consultation with BLM and CDFW. The plan would at a minimum include timing, trapping methods, and location of release of the individual badger as well as the name and resume, including documentation of relevant handling permits of the proposed trapper.

2. Address other factors and procedures that may affect the success of kit fox and American badger relocation offsite, such as:

   a. Qualitative discussion of availability of suitable habitat on off-site surrounding lands within 10 miles of the project boundary, and quantitative evaluation of unoccupied desert kit fox burrows available on surrounding lands within 1 mile of the project boundary (e.g., by inventorying burrow numbers in selected representative sample areas);

   b. Estimates of the distances kit foxes would need to travel across the project site and across adjacent lands to safely access suitable habitat (including burrows) off-site;

   c. Proposed scheduling of the passive relocation effort;

   d. Methods to minimize likelihood that the animals will return to the project site;

   e. Descriptions of any proposed or potential ground disturbing activities related to kit fox relocation, and locations of those activities (e.g., artificial burrow construction);

   f. A monitoring and reporting plan to evaluate success of the relocation efforts and any subsequent re-occupation of the project site; and

   g. A plan to subsequently relocate any animals that may return to the site (e.g., by digging beneath fences).

3. Address notification procedures for notifying the CPM, BLM and CDFW if injured, sick, or dead badger or kit fox are detected. Notify the CPM, BLM and CDFW if injured, sick, or dead American badger and desert kit fox are found. If an injured, sick, or dead animal is detected on any area associated with the solar project site or associated linear facilities, the CPM, BLM Palm Springs/ South Coast Field Office and the Ontario CDFW Office shall be notified immediately by phone. Written follow-up notification via FAX or electronic communication shall be submitted to the CPM, BLM and CDFW within 24 hours of the incident and shall include the following information as appropriate:

a. *Injured animals.* If an American badger or desert kit fox is injured because of any project-related activities, the Designated Biologist or approved Biological Monitor shall immediately notify the CPM, BLM and CDFW personnel regarding the capture and transport of the animal to CDFW-approved wildlife rehabilitation and/or veterinarian clinic. Following the phone notification, the CPM and CDFW shall determine the final disposition of the injured animal, if it recovers. A written notification of the incident shall be sent to the CPM, BLM and CDFW containing, at a minimum, the date, time, location, and circumstances of the incident.

b. *Sick animals.* If an American badger or desert kit fox is found sick and incapacitated on any area associated with the project site or associated linear facilities, the Designated Biologist or approved Biological Monitor shall immediately notify the CPM, BLM and CDFW personnel for immediate capture and transport of the animal to a CDFW-approved wildlife rehabilitation and/or veterinarian clinic. Following the phone notification, the CPM and CDFW shall determine the final disposition of the sick animal, if it recovers. If the animal dies, a necropsy shall be performed by a CDFW-approved facility to determine the cause of death. The project owner shall pay to have the animal transported and a necropsy performed. A written notification of the incident shall be sent to the CPM, BLM and CDFW and contain, at a minimum, the date, time, location, and circumstances of the incident.

c. *Fatalities.* If an American badger or desert kit fox is killed because of any project-related activities during construction, operation, and decommissioning or is found dead on the project site or along associated linear facilities, the Designated Biologist or approved Biological Monitor shall immediately refrigerate the carcass and notify the CPM, BLM and CDFW personnel within 24 hours of the discovery to receive further instructions on the handling of the animal. Handling of a dead kit fox shall follow the Guidelines for Handling a Desert Kit Fox Carcass (CDFW WIL) or most recent guidance. If the animal is suspected of dying of unknown causes, a necropsy shall be performed by a CDFW-approved facility to determine the cause of death. The project owner shall pay to have the animal transported and a necropsy performed.

4. Additional protection measures to be included in the plan and implemented:

a. All pipes within the project disturbance area must be capped and/or covered every evening or when not in use to prevent desert kit foxes or other animals from accessing the pipes.

b. All water sources shall be covered and secured when not in use to prevent drowning.

c. The project owner shall coordinate with CDFW to identify any additional fence design features to maximize the effectiveness of the fence to exclude kit foxes from the project.

d. Incorporate and implement the CDFW Veterinarian’s guidance regarding impact avoidance measures including measures to prevent disease spread among desert kit foxes.

e. Include measures to reduce traffic impacts to wildlife if the project owner anticipates night-time construction. The plan must also include a discussion of what information will be provided to all night-time workers, including truck drivers, to educate them about the threats to kit fox, what they need to do to avoid impacts to kit fox, and what to report if they see a live, injured, or dead kit fox.

f. In order to reduce the likelihood of distemper transmission:

i. No pets shall be allowed on the site prior to or during construction, operation, and decommissioning, with the possible exception of vaccinated kit fox scat detection dogs during preconstruction surveys, and then only with prior CPM and CDFW approval;

ii. Any hazing activities that include the use of chemical or other repellents (e.g. ultrasonic noise makers, or non-animal-based chemical repellents) must be cleared through the CPM and CDFW prior to use. The use of animal tissue or excretion based repellents (e.g. coyote urine, anal gland products) is not permitted.

iii. Any sick or diseased kit fox, or documented kit fox mortality shall be reported to the CPM, CDFW, and the BLM within 8 hours of identification. If a dead kit fox is observed, it shall be collected and stored according to established protocols distributed by CDFW WIL, and the WIL shall be contacted to determine carcass suitability for necropsy.

5. ***Verification*:** No fewer than 90 days prior to the start of any pre-construction site mobilization, the project owner shall provide the CPM, BLM, and CDFW with a draft American Badger and Desert Kit Fox Mitigation and Monitoring Plan for review and comment.

No fewer than 45 days prior to start of any pre-construction site mobilization, the project owner shall provide an electronic copy of the CPM-approved final plan to the CPM, BLM and CDFW and implement the plan.

The Project owner shall submit a report to the CPM, BLM and CDFW within 30 days of completion of any badger and kit fox surveys. The report shall describe survey methods, results, impact avoidance and minimization measures implemented, and the results of those measures.

No later than 2 days following a phone notification of an injured, sick, or dead American badger or desert kit fox, the project owner shall provide to the CPM, BLM and CDFW, via FAX or electronic communication, a written report from the Designated Biologist describing the incident of sickness, injury, or death of an American badger or desert kit fox, when the incident occurred, and who else was notified.

Beginning with the first month after start of construction and continuing every month until construction is completed, the Designated Biologist shall include a summary of events regarding the American badger and desert kit fox in each MCR.

No later than 45 days after initiation of project operation, the Designated Biologist shall provide the CPM and BLM a final American Badger and Desert Kit Fox

Mitigation and Monitoring Plan Report that includes: 1) a discussion of all mitigation measures that were and currently are being implemented; 2) all information about project-related kit fox and badger injuries and/or deaths; 3) all information regarding sick kit fox and badger found within the project site and along related linear facilities; and 4) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the American badger and desert kit fox.

4.21.5 Residual Impacts after Mitigation Measures were Implemented

The PSEGS would eliminate most habitat for wildlife within the Project Disturbance Area. Adherence to the identified APMs and mitigation measure would avoid, minimize, or compensate for the loss to varying, but unquantified degrees, but would not completely offset those losses. Routes of wildlife movement from the mountainous southwest to the northeast would be severely curtailed due to perimeter fencing. Wildlife trailing along the perimeter fence to find a suitable route would be subject to increased vulnerability to predation. Gaps in fencing, if not properly maintained, could trap desert tortoises, badgers, kit foxes, burro deer, or Nelson’s bighorn sheep, or increase vehicle interaction hazards associated with I-10.

In addition to direct loss of habitat, the PSEGS would fragment and degrade adjacent native wildlife communities, and could promote the spread of invasive non-native plants and increase the presence of desert tortoise predators such as ravens. These habitats provide foraging, cover, and/or breeding habitat for a variety of resident wildlife, including the state and federally-listed desert tortoise, as well as Mojave fringe-toed lizard, golden eagle, migratory birds, burrowing owl, Nelson’s bighorn sheep, burro deer, American badger, and desert kit fox.

The residual impacts of the “solar flux” on resident and migratory birds and bats is unknown and unquantified and cannot be mitigated without further study of the potential hazards presented by solar tower technology. The adaptive management approach of the Avian Protection Plan described as APM BIO-16 would help provide an understanding of potential impacts from solar tower technology, and could potentially reduce future impacts for the PSEGS and other similar projects. The magnitude of this potential impact and the feasibility of reducing potential impacts following study are not known at this time.

PSEGS-specific and cumulative residual impacts remaining after the implementation of APMs could be addressed only through a regional and coordinated effort aimed at preserving and enhancing large, intact expanses of wildlife habitat and linkages, including maintaining connections between DWMAs and other movement corridors. Ongoing collaborative efforts by federal and state agencies to develop a Desert Renewable Energy Conservation Plan offer an appropriate forum for such a regional mitigation approach.

4.21.6 Unavoidable Adverse Impacts

Under the PSEGS and other action alternatives, native wildlife communities would be lost on habitat totaling 3,946.7 acres (PSEGS), 4,366 acres (Reconfigured Alternative 2, Option 1), and 4,330 acres (Reconfigured Alternative 2, Option 2). Unquantified indirect losses to wildlife habitats and communities would occur adjacent and downwind from the PSEGS site, including habitat for desert tortoise, Mojave fringe-toed lizard, golden eagle foraging, American badger, burrowing owl, other special status and migratory birds, and kit fox, and would degrade and fragment adjacent wildlife communities, decreasing regional connectivity and dispersal of resident wildlife. Additionally, the proposed project is likely to promote the spread of invasive non-native plants and to subsidize desert tortoise predators. Construction, operation or maintenance activities could result in some death, harm, harassment, removal, or capture of wildlife, including eggs and nests and so constitute unavoidable loss of individual animals.

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CHAPTER 5

Consultation, Coordination and Public Involvement

5.1 Interrelationships

Major authorizing laws and regulations authorizing the BLM to take action with respect to ROW grant authorization and amendment of the CDCA Plan for the proposed PSEGS are summarized in Section 1.4.1.

In addition to these authorities, the BLM coordinates its fire management activities with the actions of related federal and state agencies responsible for fire management. The Federal Wildland Fire Policy is a collaborative effort that includes the BLM, USFS, National Park Service (NPS), USFWS, Bureau of Indian Affairs (BIA), the National Biological Service, and state wildlife management organizations. The collaborative effort has formulated and standardized the guiding principles and priorities of wildland fire management. The National Fire Plan is a collaborative interagency effort to apply the Federal Wildland Policy to all Federal Land Management Agencies and partners in state forestry or lands departments. Operational collaboration between the BLM, USFS, NPS, and USFWS is included in the Interagency Standards for Fire and Fire Aviation Operations 2003. This federally approved document addresses fire management, wildfire suppression, fuels management and prescribed fire safety, interagency coordination and cooperation, qualifications and training, objectives, performance standards, and fire management program administration.

5.1.1 Department of Defense

BLM coordinates with Department of Defense prior to approval of rights-of-way for renewable energy, utility, and communication facilities to ensure that these facilities would not interfere with military training routes. Coordination for the PSEGS is ongoing.

5.1.2 U.S. Army Corps of Engineers

As discussed in Sections 1.2.5 and 5.1.2 of the PSPP PA/FEIS (pp. 1-6 and 5-1 et seq., respectively), the USACE rendered a final opinion on August 2, 2010 concluding that the PSPP would not affect waters of the U.S. and thus, would not require a Section 404 permit. Because the PSEGS is proposed within the same footprint as was analyzed in the PSPP PA/FEIS and for other reasons, the PSEGS also would not affect waters of the U.S. and also would not require a Section 404 permit.

5.1.3 California Energy Commission

As summarized in Sections 1.2.2 and 5.1.3 of the PSPP PA/FEIS (pp. 1-4 and 5-2, respectively), the California Energy Commission (CEC) has exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger. The CEC approved the PSPP in December 2010. On December 17, 2012, PSH LLC submitted a Petition to Amend the original CEC Final Decision to approve the project modifications associated with the change in concentrating solar power technology from using parabolic troughs to solar power tower. Pursuant to CEQA, the CEC issued a Preliminary Staff Assessment (PSA) for the PSEGS on June 28, 0213. It is anticipated that the PSA will be followed by a Staff Assessment, Presiding Member's Proposed Decision, and Commission Decision in the months to come. The CEC's licensing proceeding and associated environmental review are separate from and independent of the BLM's consideration of the PSEGS under FLPMA and NEPA.

5.1.4 California Department of Fish and Wildlife

As discussed in Sections 1.2.6 and 5.1.4 of the PSPP PA/FEIS (pp. 1-7 and 5-2 et seq., respectively), the California Department of Fish and Wildlife (CDFW), formerly the California Department of Fish and Game (CDFG), protects fish and aquatic habitats within California through regulation of streambed alternations under Section 1602 of the state Fish and Game Code. As part of the PSPP, the prior applicant filed a Streambed Alteration Agreement in November 2009. Compliance with the requirements of SAA provisions is among the mitigation measures that were identified in the PSPP PA/FEIS that have been included in the PSEGS as Applicant Proposed Measures (see Draft SEIS Section 2.1.7).

CDFW also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code §2050 et seq.). Accordingly, in January 2010 and as part of the PSPP, the prior applicant submitted to CDFG an application for a CESA Section 2081(B) Incidental Take Permit and Revised Desert Tortoise Technical Report. Evaluation of compliance with the requirements of incidental take authorization will be evaluated as required by the adopted mitigation measures.

5.1.5 South Coast Air Quality Management District

As discussed in Section 5.1.5 of the PSPP PA/FEIS (p. 5-3), the PSPP site is located in the Mojave Desert Air Basin[1] and is under the jurisdiction of the South Coast Air Quality Management District (District). The District issued a Final Determination of Compliance (FDOC) for the PSPP on December 1, 2010. The PSEGS is proposed substantially within the same footprint as the PSPP, and so also is located within the Mojave Desert Air Basin and subject to the District's jurisdiction. Coordination with the District for the PSEGS is ongoing.

1 The Mojave Desert Air Basin lies inland southeast of the San Joaquin Valley Air Basin, and northeast of the South Coast Air Basin. The desert portions of Kern, San Bernardino, Riverside, and Los Angeles counties are within its boundaries.

5.1.6 California Department of Transportation

As discussed in Section 5.1.6 of the PSPP PA/FEIS (p. 5-3), the California Department of Transportation (Caltrans) has jurisdiction over encroachments to Caltrans facilities and related easements and ROWs. Caltrans approval would be required prior to the installation of a locked gate in the I-10 ROW fence, for maintenance of the I-10 fence and gate, for the installation of desert tortoise exclusion fencing along I-10 within Caltrans's ROW, and potentially also for the transport of hazardous materials or other deliveries. Compliance with Caltrans requirements for the PSEGS would be met through implementation of APMs, including, for example, BIO-9 (desert tortoise fencing), TRANS-1 (roadway use), TRANS-2 (hazardous materials transport), and TRANS-4 (over-sized load permits) (see Appendix C).

5.2 Description of Consultation Processes for ESA Section 7, NHPA Section 106, and Indian Tribes

5.2.1 U.S. Fish and Wildlife Service

As described in PSPP PA/FEIS Sections 1.2.3 and 5.2.1 (pp. 1-5 and 5-4, respectively), the USFWS has jurisdiction over threatened and endangered species listed under the Endangered Species Act (ESA) (16 USC §1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA for the PSPP was initiated in March 2010 and concluded with the June 2, 2011, issuance of a biological opinion (BO) related to potential impacts to the federally threatened desert tortoise and its designated critical habitat. Conservation measures were identified in the BO to reduce adverse impacts to this species. The BLM currently is reviewing a Draft Biological Assessment (BA) that outlines the changes and effects of the PSEGS relative to the PSPP. Upon completion of review and submittal of the BA, the BLM will initiate Section 7 consultation with the USFWS to produce a BO for the PSEGS.

5.2.2 Tribal Consultation and Section 106 Compliance

The BLM consults with Native American Indian tribes in accordance with several authorities, including NEPA, the NHPA (16 USC §470), as amended; the American Indian Religious Freedom Act of 1978 (42 USC §1996), as amended; Executive Order (E.O.) 13007 (May 24, 1996), concerning Indian Sacred Sites; E.O. 13175 (Nov. 6, 2000), concerning Consultation and Coordination With Indian Tribal Governments; and the Presidential Memorandum of April 29, 1994 (59 Fed. Reg. 22951 (1994). For the PSPP, in coordination and cooperation with the CEC, the BLM expanded its consultation to include Native American groups not recognized as Indian tribes by the federal government.

Sixteen tribes or related entities were identified and invited to consult on the PSPP, including:

1. Agua Caliente Band of Cahuilla Indians THPO
2. Augustine Band of Cahuilla Mission Indians
3. Cabazon Band of Mission Indians
4. Cahuilla Band of Mission Indians

5. Chemehuevi Indian Tribe
6. Cocopah Indian Tribe
7. Colorado River Indian Tribes
8. Fort Mojave Indian Tribe
9. Fort Yuma Quechan Indian Tribe
10. Morongo Band of Mission Indians
11. Quechan Indian Tribe
12. Ramona Band of Mission Indians
13. San Manuel Band of Mission Indians
14. Soboba Band of Luiseno Indians
15. Torres-Martinez Desert Cahuilla Indians
16. Twentynine Palms Band of Mission Indians

The BLM also consulted with Native American Indian tribes and interested tribal members on the development and execution of a Programmatic Agreement for the PSPP, in accordance with 36 CFR Part 800.14(b) (September 21, 2010). Programmatic agreements are used for the resolution of adverse effects for complex project situations and when effects on historic properties (resources eligible for or listed in the National Register of Historic Places) cannot be fully determined prior to approval of an undertaking. Consultation in accordance with NHPA Section 106 is an ongoing process.

As part of the PSPP, the BLM conducted government-to-government consultation with a number of tribal governments. The consultation and discussions revealed concerns about the importance and sensitivity of cultural resources on and near the PSPP site, concerns about cumulative effects to cultural resources, and, further, that they tribes attach significance to the broader cultural landscape. As a result of the tribal consultation process, many important cultural resources were identified in the project study area and incorporated into the PSPP design and analysis, as well as the PSEGS and this Draft SEIS.

5.3 Implementation, Monitoring and Enforcement

If any of the action alternatives is approved, then the BLM would continue to involve and collaborate with the public during project implementation. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. BLM invites citizens and user groups within the project area to become actively involved in implementation, monitoring, and enforcement of decisions. BLM and citizens may collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

BLM would monitor activities throughout the life of the project to ensure that decisions are implemented in accordance with the approved ROD and ROW grant. Monitoring would be conducted to determine whether decisions, APMs, BMPs, and approved mitigation are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

5.4 Scoping

5.4.1 PSPP EIS

The BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the PSPP EIS, as well as the extent to which those issues and impacts would be analyzed in the document, as described in the PSPP PA/FEIS. See PSPP PA/FEIS Section 5.4 (p. 5-6) and PSPP PA/FEIS Appendix D for details.

5.4.2 Draft SEIS

Supplemental EISs are prepared, circulated, and filed with the same requirements as EISs, except that supplemental EISs do not require scoping (40 CFR 1502.9). No formal scoping activities occurred for the Draft SEIS. Nonetheless, the BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the Draft SEIS as well as the extent to which those issues and impacts would be analyzed in the document at a multi-agency meeting held March 26, 2013, at the University of California at Riverside's Palm Desert Campus, which is located at 75080 Frank Sinatra Drive in Palm Desert, California.

5.5 Public Comment Process

5.5.1 PSPP EIS

As described in PSPP PA/FEIS Section 5.5.1, the BLM and the CEC issued a joint Staff Assessment/Draft Environmental Impact Statement for the PSPP for public and agency review and comment on March 18, 2010. The comment period ended on July 1, 2010. Eight comment letters were received. PSPP PA/FEIS Section 5.5.1 (p. 5-7) includes a list of all individuals, agencies and organizations that provided written comments, Section 5.5.2 (p. 5-7 et seq.) provides common (consolidated) responses for topics regarding which a number of similar or related comments were received, and Section 5.5.3 (p. 5-56 et seq.) provides responses to all individual comments received.

5.5.2 Draft SEIS

This Draft SEIS will be circulated for a 90-day public comment period. All comments must be postmarked no later than 90 days from the date the Notice of Availability for the Draft SEIS published in the Federal Register by the USEPA. All substantive issues raised in writing during the comment period will be considered, and modifications based on these comments may be made to develop the Final EIS for the PSEGS.

Comments on the Draft PA/EIS may be submitted to BLM in any of the following ways:

U.S. Post Palen Solar Electric Generating System
1201 Bird Center Drive
Palm Springs, CA 92262

E-mail: fmcmenimen@blm.gov

Phone: (760) 833-7150

Additional printed or electronic (CD-ROM) versions of the Draft SEIS may be obtained by contacting the Palm Springs-South Coast Field Office. The document also will be available on the Internet at: http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/palen_solar_electric.html.

5.6 List of Preparers

Though individuals have primary responsibility for preparing sections of the Draft SEIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM's Field Office, State Office, and Washington Office review the analysis and supply information, as well as provide document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review.

TABLE 5-1
LIST OF PREPARERS

Name	Job Title/ Primary Responsibility	
BLM Personnel		
McMenimen, Frank	Project Manager	BLM, Renewable Energy Coordination Office
Elser, Lynnette	Planner	BLM, Renewable Energy Coordination Office
Fesnock, Amy	Biologist	BLM, California State Office
Godfrey, Peter	Hydrologist	BLM, Renewable Energy Coordination Office
Gomez, Diane	Realty Specialist	BLM, Palm Springs-South Coast Field Office
Hickey, Michael	Solicitor	U.S. Department of Justice
Hill, Greg	Wilderness Specialist	BLM, Renewable Energy Coordination Office
Kline, George	Archeologist	BLM, Palm Springs-South Coast Field Office
Ludwig, Noel	Hydrologist	BLM, Renewable Energy Coordination Office
Marsden, Kim	Biologist	BLM, Renewable Energy Coordination Office
McGinnis, Sandra	Sr. Planner	BLM, California State Office
Miller, Luke	Solicitor	U.S. Department of Justice
Meyer-Shield, Elizabeth	Planner	BLM, California State Office
Thomas, Tiffany	Archeologist	BLM, Renewable Energy Coordination Office
Environmental Science Associates		
Stewart, Shannon	Project Director	Quality Assurance/Quality Control
Scott, Janna	Project Manager	Quality Assurance/Quality Control
Davidian, Elijah	Deputy Project Manager	Livestock and Grazing, Public Health and Safety, Wild Horse and Burros

TABLE 5-1 (Continued)
LIST OF PREPARERS

Name	Job Title/ Primary Responsibility	Office Location
Environmental Science Associates (cont.)		
Bray, Madeleine	Associate III	Cultural Resources
Carlson, Allisa	Senior Associate	Visual Resources
Costa, Peter	Senior Associate	Transportation
Devadiga, Asavari	Managing Associate II	Water Resources
Dvorak, Amy Natasha	Senior Associate	Vegetation, Wildlife
Fagundes, Matthew	Managing Associate	Air Resources, Climate Change, Noise
Hudson, Peter	Director	Mineral Resources, Paleontological Resources, Soils Resources, Water Resources
Hutchison, Jack	Managing Associate III	Transportation
Jung, Perry	Senior Graphics	Graphics
Kostalas, Alexandra	Senior Associate	Environmental Justice, Lands and Realty, Multiple Use Classes, Recreation, Special Designations
Lancelle, Karen	NEPA Analyst	Mineral Resources, Paleontological Resources, Socioeconomics, Soils Resources
McCullough, Wes	GIS Analyst	Figures
Pittman, Brian		Vegetation, Wildlife, Wildland Fire Ecology
Strauss, Monica	Director	Cultural Resources
Taplin, Justin	Technical Associate	Soil and Mineral Resources
Tierney, Kristina	Senior Associate	Air Resources, Climate Change, Noise
Consultants Providing Independent Third Party Review of the Draft SEIS		
Babb, Vicky	Vicky Babb Consulting	Aviation and Military
Burch, Alvin	Burch Consulting Services	Minerals
Clapp, Elvin	Eagle Trails Consulting	Visual Resource Management
Cordery, Ted	TEC Ecological	Vegetation, Wildlife, Wildland Fire Ecology
Cox, Levi	Section 37	Project Management Assistance
Hooper, Ron	Wind Whistle Consulting	Air, Water, Soils, Grazing, and Wild Horse and Burros
Kershaw, Byard	North Rim Consulting	Hazmat and Public Health and Safety
Kershaw, Carol	Red Rock Consulting	Lands and Realty, Multiple Use Classifications
O'Sullivan, Terry	O'Sullivan Resources	Recreation and Special Designations
Simmons, Gregg	Simmons ENRC	Land Use Planning and NEPA
Stumpf, Gary	Legacy Cultural Resource Consulting	Cultural `Resources, Environmental Justice, Paleontological Resources

CHAPTER 6
Acronyms and Abbreviations

3D	three-dimensional
$\mu g/m^3$	micrograms per cubic meter
°F	degrees Fahrenheit
AAQS	ambient air quality standards
AC	alternating current
ACEC	Area of Critical Environmental Concern
ACRP	Airport Cooperative Research Program
ACS	American Community Survey
AERMOD	AMS/EPA Regulatory Model
af or ac-ft	acre-feet
afy or ac-ft/yr	acre-feet per year
AFD	Airport/Facility Directory
AGL	above ground level
AIM	Aeronautical Information Manual
AML	appropriate management level
ANSI	American National Standards Institute
APE	Area of Potential Effects
APM	Applicant Proposed Measure
Applicant	Palen Solar Holdings, LLC
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARM	Ambient Ratio Method
ASTM	American Society for Testing Materials Standards
BA	Biological Assessment
bgs	below ground surface
BLM	United States Bureau of Land Management
BMPs	best management practices
BO	Biological Opinion
BRSA	Biological Resources Study Areas
BSE	BrightSource Energy, Inc.
CAA	Clean Air Act
CADD	Computer-aided drafting and design

CalFIRE	California Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council
Cal-OSHA	California - Occupational Safety and Health Administration
Caltrans	California State Department of Transportation
CBC	California Building Code
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDCA Plan	California Desert Conservation Area Plan of 1980, as amended
CDF	California Department of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFATS	Chemical Facility Anti-Terrorism Standard
CFP	California Fully Protected
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPF	California Protected Furbearing Mammal
CPGS	California Protected Game Species
CPUC	California Public Utilities Commissions
CRPR	California Rare Plant Rank
CSC	California Species of Special Concern
CVBG	Chuckwalla Valley Groundwater Basin
CWA	Clean Water Act

dBA	A-weighted decibels
DC	direct current
DHS	Department of Homeland Security
DOC	California Department of Conservation
DOD	United States Department of Defense
DOE	United States Department of Energy
DOI	United States Department of the Interior
DPM	diesel particulate matter
DPV1	Devers-Palo Verde No. 1 Transmission Line
DPV2	Devers-Palos Verde No. 2 Transmission Line
DRECP	California Desert Renewable Energy Conservation Plan
DWMA	Desert Wildlife Management Area
EDD	California Employment Development Department
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Field
E.O.	Executive Order
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDOC	Final Determination of Compliance
FE	Federally listed as endangered
FEIS	Final Environmental Impact Statement
FESA	Federal Endangered Species Act
FHWA or FHA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FM	Frequency Modulated
FMAP	Fire Management Activity Plan
fps	feet per second
ft	feet
FT	Federally listed as threatened
FTA	Federal Transit Administration
FTE	full time equivalent
GDE	groundwater dependent ecosystems
gen-tie	generation-tie (power transmission) line
GHG	greenhouse gas
GIS	geographic information system
gpd	gallons per day
gpm	gallons per minute
HARP	Hotspots Analysis Reporting Program
hp	horsepower
HP	high pressure
HTF	Heat Transfer Fluid

I-10	Interstate-10
IMPLAN	**IM**pact analysis for **PLAN**ning data and software
IP	intermediate pressure
IR	Instrument Route
JTNP	Joshua Tree National Park
km	Kilometer
KOPs	key observation points
kV	kilovolt
lb/yr	pounds per year
LCRS	leak collection and recovery system
LGIA	Large Generator Interconnection Agreement
LOS	level of service
LOS A	level of service-free flow
LOS F	level of service-poor progression
LP	low pressure
LTU	Land Treatment Unit
LTVA	Long-Term Visitor Area
MCY	million cubic yards
MDAB	Mojave Desert Air Basin
MEI	maximum exposed individual
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
MFTL	Mojave fringe toed lizard
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
m/s	meters per second
MMBtu	1 million British thermal units
MRZ	Mineral Resource Zone
MSA	Metropolitan Statistical Area
MTR	Military Training Route
MUC	Multiple-Use Class
MUC-C	Multiple-Use Class Controlled
MUC-I	Multiple-Use Class Intensive
MUC-L	Multiple-Use Class Limited
MUC-M	Multiple-Use Class Moderate
MUC-U	Multiple-Use Class Unclassified
MUN	Municipal and Domestic Water Supply
MW	megawatts
Mw	Maximum Earthquake Magnitude
MWh	megawatt-hour
N/A	Not Applicable

N_2O	nitrous oxide
NO_2	nitrous dioxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVAIDS	navigational aids
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act
NIOSH	National Institute of Safety and Health
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO_X	nitrogen oxides
NOTAM	Notice to Airmen
NPDES	National Pollutant Discharge Elimination System
NPS	United States National Park Service
O_2	oxygen
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OHV	off-highway vehicle
OSHA	United States Occupational Safety and Health Administration
PA	Programmatic Agreement
PEIS, or Solar PEIS	Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
POD	Plan of Development
PPA	Power Purchase Agreement
ppm	parts per million
PPV	peak particle velocity
PSA	Preliminary Staff Assessment
PSH	Palen Solar Holdings, LLC
PSI	Palen Solar I, LLC
PSIII	Palen Solar III, LLC
psi	pounds per square inch
psia	pounds per square inch absolute

PSPP	Palen Solar Power Project
PV	photovoltaic
RCFD	Riverside County Fire Department
RO	reverse osmosis
ROD	Record of Decision
ROW	right-of-way
RPOSD	Riverside County Regional Park and Open-Space District
RPS	Renewables Portfolio Standard
RSA	Revised Staff Assessment
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
S	Sensitive
SAA	Lake or Streambed Alteration Agreement
SAC	surface air coolers
SE	State listed as endangered
SEZ	Solar Energy Zone
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SO_4	sulfate
SOPs	standard operating procedures
SO_X	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SRA	Safety Risk Assessment
SRSG	Solar Receiver Steam Generator
STG	steam turbine-generator
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TFR	temporary flight restriction
UDI	undocumented immigrants
µg/L	micrograms per Liter
$\mu g/m^3$	micrograms per cubic meter
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UXO	unexploded ordnance
VITD	visual impact threshold distance

VOCs	volatile organic compounds
VR	Visual Route
VRM	Visual Resource Management
W/m2	watts per square meter
WDR	Waste Discharge Requirement
WECC	Western Electricity Coordinating Council
WHMA	Wildlife Habitat Management Area
WL	Watch List
WMU	Waste Management Units
ZCTA	Zip Code Tabulation Area

CHAPTER 7
Glossary of Terms

A

Adjacent: Defined by ASTM E1527-00 as any real property the border of which is contiguous or partially contiguous with that of the Site or would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

Air Basin: A regional area defined for state air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Air Quality Control Region: A regional area defined for federal air quality management purposes based on considerations that include topographic features that influence meteorology and pollutant transport patterns, and political jurisdiction boundaries that influence the design and implementation of air quality management programs.

Alluvium: A fine-grained fertile soil consisting of mud, silt, and sand deposited by flowing water on flood plains, in river beds, and in estuaries. An unconsolidated deposit of clay, silt, sand, or gravel deposited in comparatively recent geologic time in stream or river channels, floodplains, deltas, or at the base of a mountain slope.

Alluvial Fan: Fan shaped material of water deposited material. A low, outspread, relatively flat to gently sloping mass of loose rock material shaped like an open fan or segment of a cone deposited by running water where it issues from a narrow mountain valley upon a plain or broad valley. The apex of the fan points upstream.

Ambient Air Quality Standards: A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the U.S. Environmental Protection Agency. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ambient Air: Outdoor air in locations accessible to the general public.

Archaeological district: A significant concentration, linkage, or continuity of sites, buildings, or features important in history or prehistory. There can be discontiguous districts composed of resources that are not in close proximity to one another

Area of Critical Environmental Concern (ACEC): A designated area on public lands where special management attention is required: (1) to protect and prevent irreparable damage to fish and wildlife; (2) to protect important historic, cultural, or scenic values, or other natural systems or processes; or (3) to protect life and safety from natural hazards.

Attainment Area: An area that has air quality as good as or better than a national or state ambient air quality standard. A single geographic area may be an attainment area for one pollutant and a non-attainment area for others.

B

Basic Elements: The four design elements (form, line, color, and texture), which determine how the character of a landscape is perceived.

Best Management Practices (BMPs): A practice or combination of practices that are determined to provide the most effective, environmentally sound, and economically feasible means of managing an activity and mitigating its impacts.

Bioremediation: The use of biological agents, such as bacteria or plants, to remove or neutralize contaminants, as in polluted soil or water.

Buffer Area: An area beyond the Project Disturbance Area used to evaluate suitable habitat for biological resources surveys and biological resources analysis purposes. The Project Disturbance Area and the Buffer Area constitute the Biological Resources Study Area, or BRSA.

C

Calcareous Substrates: Substances, often of a chalky composition, containing, or resembling calcium carbonate.

Cancer: A class of diseases characterized by uncontrolled growth of somatic cells. Cancers are typically caused by one of three mechanisms: chemically induced mutations or other changes to cellular DNA; radiation induced damage to cellular chromosomes; or viral infections that introduce new DNA into cells.

Carbon Monoxide (CO): A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of the blood.

Characteristic: A distinguishing trait, feature, or quality.

Characteristic Landscape: The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

Climate: A statistical description of daily, seasonal, or annual weather conditions based on recent or long-term weather data. Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature, precipitation, humidity, wind, cloud cover, and sunlight intensity patterns; statistics on the frequency and intensity of tornado, hurricane, or other severe storm events may also be included.

Community Noise Equivalent Level (CNEL): A 24-hour average noise level rating with a 5 dB penalty factor applied to evening noise levels and a 10 dB penalty factor applied to nighttime noise levels. The CNEL value is very similar to the Day-Night Average Sound Level (Ldn) value, but includes an additional weighting factor for noise during evening hours.

Contrast: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Contrast Rating: A method of analyzing the potential visual impacts of proposed management activities.

Cretaceous: In geologic history, the third and final period of the Mesozoic Era, from approximately 145 million to 65 million years ago.

Criteria Pollutant: An air pollutant for which there is a national ambient air quality standard (carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, inhalable particulate matter, fine particulate matter, or airborne lead particles).

Critical Habitat: Habitat designated by the US Fish and Wildlife Service under Section 4 of the Endangered Species Act and under the following criteria: 1) specific areas within the geographical area occupied by the species at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and that may require special management of protection; or 2) specific areas outside the geographical area by the species at the time it is listed but that are considered essential to the conservation of the species.

Cultural Landscape: A geographic area, including both natural and cultural resources, associated with a historic event, activity, group, or person; or, a geographic area that has been assigned cultural or social meaning by associated cultural groups.

Cultural Modification: Any man-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource: A location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological and historical sites, structures, buildings, objects, artifacts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. And they may include definite locations of traditional, cultural, or religious importance to specified social or cultural groups.

Cultural Resource Data: Cultural resource information embodied in material remains such as artifacts, features, organic materials, and other remnants of past activities. An important aspect of data is context, a concept that refers to the relationships among these types of materials and the situations in which they are found.

Cultural Resource Data Recovery: The professional application of scientific techniques of controlled observation, collection, excavation, and/or removal of physical remains, including analysis, interpretation, explanation, and preservation of recovered remains and associated records in an appropriate curatorial facility used as a means of protection. Data recovery may sometimes employ professional collection of such data as oral histories, genealogies, folklore, and related information to portray the social significance of the affected resources. Such data recovery is sometimes used as a measure to mitigate the adverse impacts of a ground-disturbing project or activity.

Cultural Resource Integrity: The condition of a cultural property, its capacity to yield scientific data, and its ability to convey its historical significance. Integrity may reflect the authenticity of a property's historic identity, evidenced by the survival or physical characteristics that existed during its historic or prehistoric period, or its expression of the aesthetic or historic sense of a particular period of time.

Cultural Resource Inventory (Survey): A descriptive listing and documentation, including photographs and maps of cultural resources. Included in an inventory are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and on-the-ground surveys of varying intensity.

> ***Class I:*** A professionally prepared study that compiles, analyzes, and synthesizes all available data on an area's cultural resources. Information sources for this study include published and unpublished documents, BLM inventory records, institutional site files, and state and National Register files. Class I inventories may have prehistoric, historic, and ethnological and sociological elements. These inventories are periodically updated to include new data from other studies and Class II and III inventories.
>
> ***Class II:*** A professionally conducted, statistically based sample survey designed to describe the probable density, diversity, and distribution of cultural properties in a large area. This survey is achieved by projecting the results of an intensive survey carried out over limited parts of the target area. Within individual sample units, survey aims, methods, and intensities are the same as those applied in Class III inventories. To improve statistical reliability, Class II inventories may be conducted in several phases with different sample designs.
>
> ***Class III:*** A professionally conducted intensive survey of an entire target area aimed at locating and recording all visible cultural properties. In a Class III survey, trained observers commonly conduct systematic inspections by walking a series of close interval parallel transects until they have thoroughly examined an area.

Cultural Resource Values: The irreplaceable qualities that are embodied in cultural resources, such as scientific information about prehistory and history, cultural significance to Native Americans and other groups, and the potential to enhance public education and enjoyment of the Nation's rich cultural heritage.

Cultural Site: A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic property. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.

D

Day/Night Average Sound Level (Ldn): A 24-hour average noise level rating with a 10 dB penalty factor applied to nighttime noise levels. The Ldn value is very similar to the CNEL value, but does not include any weighting factor for noise during evening hours.

Decibel (dB): A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or various electronic signal measurements.

Distance Zones: A set of pre-determined distances from a viewpoint. In the BLM's visual resource management system, landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. The zones are foreground-middleground, background, and seldom seen. The foreground-middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than 3-5 miles away. Seen areas beyond the foreground-middleground zone but usually less than 15 miles away are in the background zone. Areas not seen as fore-ground-middleground or background (i.e., hidden from view) are in the seldom-seen zone.

Desert Pavement: A surface covering of closely packed rock fragments of pebble or cobble size found on desert soils.

Desert Wildlife Management Area (DWMA): areas established in the NECO Plan to address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained (Category I habitat).

Distance Zones: A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

E

Enhancement: A management action designed to improve visual quality.

Equivalent Average Sound Pressure Level (Leq): The decibel level of a constant noise source that would have the same total acoustical energy over the same time interval as the actual time-varying noise condition being measured or estimated. Leq values must be associated with an explicit or implicit averaging time in order to have practical meaning.

Ethnohistoric Resources: Areas used by Native Americans following exploration and settlement by non-Native Americans. Sites or artifacts of particular significance to modern Native Americans are often kept secret by those groups to protect the sites from disturbance, looting, overuse, or other defamations.

Ethnographic: Pertaining to the systematic study and description of human cultures. The ethnographic setting described in this Draft SEIS pertains to Native Americans as they lived at the time of contact by non-Native Americans.

Excavation: The scientific examination of an archaeological site through layer-by-layer removal and study of the contents within prescribed surface units, e.g. square meters.

F

Form: The mass or shape of an object or objects which appear unified, such as a vegetative opening in a forest, a cliff formation, or a water tank.

G

Geomorphic Province: Naturally defined geologic regions that display a distinct landscapes or landforms.

Glare: The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility. See Glint.

Glint: A momentary flash of light resulting from a spatially localized reflection of sunlight.

Greenhouse Gas: A gaseous compound that absorbs infrared radiation and re-radiates a portion of hat back toward the earth's surface, thus trapping heat and warming the earth's atmosphere.

H

Habitat: A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Historical Site: A location that was used or occupied after the arrival of Europeans in North America (ca. A.D. 1492). Such sites may consist of physical remains at archaeological sites or areas where significant human events occurred, even though evidence of the events no longer remains. They may have been used by people of either European or Native American descent.

Holocene: In geologic history, of, denoting, or formed in the second and most recent epoch of the Quaternary Period, which began 10,000 years ago at the end of the Pleistocene and which continues today.

Hydrocarbons: Any organic compound containing only carbon and hydrogen, such as the alkanes, alkenes, alkynes, terpenes, and arenes.

I

Igneous: Rock, such as granite and basalt, which has solidified from a molten or partially molten state.

Indian Tribe: Any American Indian group in the United States that the Secretary of the Interior recognizes as possessing tribal status. Section 301 of the National Historic Preservation Act defines Indian tribe as a tribe, band, nation, or other organized group or community which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians. Federally-recognized tribes are listed periodically in the Federal Register.

Indigenous: Being of native origin, such as indigenous peoples or indigenous cultural features.

Invasive Species: An exotic species whose introduction does or is likely to cause economic or environmental harm or harm to human health (Executive Order 13122, Feb. 3, 1999).

Isolate: Artifacts not associated with other artifacts or features. Also, non-linear, isolated archaeological features without associated artifacts.

K

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing.

L

Lacustrine: Of, relating to, or associated with lakes. Lacustrine sediments are soils deposited by lakes.

Landscape Character: The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality which distinguishes it from its immediate surroundings.

Landscape Features: The land and water form, vegetation, and structures which compose the characteristic landscape.

Leasable Minerals: Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands potash, phosphate, sodium, and geothermal steam.

Line: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

Lithic: Consisting of or pertaining to stone. In archaeology, lithic artifacts include ground and chipped stone tools and the debris resulting from their manufacture. Lithic scatters are collections of stone flakes on the surface of the ground that were produced during the manufacture of stone tools.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon variety minerals not subject to lease or sale.

Long Term Visitor Area: LTVAs are, in most cases, the traditional use areas of long-term visitors on BLM managed lands. The LTVA program was established in Arizona and California to designate areas for safe and proper accommodation of the increasing demand for long-term winter visitation and for natural resource protection through improved management of this use. The program, which was instituted in 1983, designated LTVAs and identified an annual long-term use season from September 15 to April 15. During the long-term season, visitors who wish to camp on public lands in one location for extended periods must stay in the designated LTVAs and purchase an LTVA special use permit.

M

Maintenance Area: An area that currently meets federal ambient air quality standards but which was previously designated as a nonattainment area. Federal agency actions occurring in a maintenance area are still subject to Clean Air Act conformity review requirements.

Management Activity: A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources as defined in BLM Manual 8400 – Visual Resource Management, April 5, 1984.

Mineral Material Disposal: The sale of sand, gravel, decorative rock, or other mineral materials defined in 43 CFR §3600.

Mining Claim: A mining claim is a selected parcel of Federal Land, presumably valuable for a specific mineral deposit or deposits, for which a right of possession has been asserted under the General Mining Law. This right is restricted to the development and extraction of a mineral deposit. The rights granted by a mining claim protect against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. The two types of mining claims are lode and placer. In addition, mill sites and tunnel sites may be located to provide support facilities for lode and placer mining, and tunnel sites may be located as an exploration tool to intersect lode deposits.

Mitigation: Mitigation includes: (a) Avoiding the impacts altogether by not taking an action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFR §1508.20).

N

National Historic Preservation Act. Established the National Register of Historic Places, the Advisory Council on Historic Preservation, State Historic Preservation Officers, Tribal Historic Preservation Officers, and a preservation grants-in-aid program. Section 106 of this Act directs all federal agencies to take into account the effects of their undertakings on properties included in or eligible for the National Register of Historic Places. Section 110 sets inventory, nomination, protection and preservation responsibilities for federally owned cultural properties.

National Pollutant Discharge Elimination System (NPDES): The NPDES permit program has been delegated in California to the State Water Resources Control Board. These sections of the CWA require that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act.

National Register District: A group of significant archaeological, historical, or architectural sites, within a defined geographic area, that is listed on the National Register of Historic Places. See National Register of Historic Places.

National Register of Historic Places: The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archeological, historic, and architectural properties (i.e. districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register. Also see National Historic Preservation Act.

National Scenic Trail: One of the three categories of national trails defined in the National Trails System Act of 1968 that can only be established by act of Congress and are administered by federal agencies, although part or all of their land base may be owned and managed by others. National Scenic Trails are existing regional and local trails recognized by either the Secretary of Agriculture or the Secretary of the Interior upon application.

Native American: Indigenous peoples of the western hemisphere.

Nitric Oxide (NO): A colorless toxic gas formed primarily by combustion processes that oxidize atmospheric nitrogen gas or nitrogen compounds found in the fuel. A precursor of ozone, nitrogen dioxide, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere over a period that may range from several hours to a few days.

Nitrogen Dioxide (NO2): A toxic reddish gas formed by oxidation of nitric oxide. Nitrogen dioxide is a strong respiratory and eye irritant. Most nitric oxide formed by combustion processes is converted into nitrogen dioxide by subsequent oxidation in the atmosphere. Nitrogen dioxide is a criteria pollutant in its own right, and is a precursor of ozone, numerous types of photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Nitrogen Oxides (NOx): A group term meaning the combination of nitric oxide and nitrogen dioxide; other trace oxides of nitrogen may also be included in instrument-based NOx measurements. A precursor of ozone, photochemically generated nitrate particles (including PAN), and atmospheric nitrous and nitric acids.

Non-native Species: See Invasive Species and Noxious Weed.

Noxious Weed: According to the Federal Noxious Weed Act (PL 93-629), a weed that causes disease or has other adverse effects on man or his environment and therefore is detrimental to the agricultural and commerce of the United States and to the public health.

Nonattainment Area: An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

O

Off-Highway Vehicle (OHV): Any vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. OHVs exclude: 1) any non-amphibious registered motorboat; 2), any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; 3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used in times of national defense emergencies.

Organic Compounds: Compounds of carbon containing hydrogen and possibly other elements (such as oxygen, sulfur, or nitrogen). Major subgroups of organic compounds include hydrocarbons, alcohols, aldehydes, carboxylic acids, esters, ethers, and ketones. Organic compounds do not include crystalline or amorphous forms of elemental carbon (graphite, diamond, carbon black, etc.), the simple oxides of carbon (carbon monoxide and carbon dioxide), metallic carbides, or metallic carbonates.

Overdraft condition: A condition in which the total volume of water being extracted from the groundwater basin would be greater than the total recharge provided to the basin.

Ozone (O3): A compound consisting of three oxygen atoms. Ozone is a major constituent of photochemical smog that is formed primarily through chemical reactions in the atmosphere involving reactive organic compounds, nitrogen oxides, and ultraviolet light. Ozone is a toxic chemical that damages various types of plant and animal tissues and which causes chemical oxidation damage to various materials. Ozone is a respiratory irritant, and appears to increase susceptibility to respiratory infections. A natural layer of ozone in the upper atmosphere absorbs high energy ultraviolet radiation, reducing the intensity and spectrum of ultraviolet light that reaches the earth's surface.

P

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are valuable for understanding past environments, environmental change, and the evolution of life. As defined in the Paleontological Resources Preservation Act, paleontological resource means any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. The term does not include any materials associated with an archaeological resource as defined in the Archaeological Resources Protection Act or any cultural item as defined in the Native American Graves Protection and Repatriation Act.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Paleozoic Era: An era of geologic time from approximately 542 to 251 600 million to 280 million years ago, between the Late Precambrian and the Mesozoic Era and comprising the Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, and Permian Periods.

Particulate Matter: Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Categories based on aerodynamic properties are commonly described as being size categories, although physical size is not used to define the categories. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Peak Particle Velocity: A measure of ground-borne vibrations. Physical movement distances are typically measured in thousandths of an inch, and occur over a tiny fraction of a second. But the normal convention for presenting that data is to convert it into units of inches per second.

Petroglyph: Pictures, symbols, or other art work pecked, carved, or incised on natural rock surfaces.

pH (parts hydrogen): The logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter.

Physiographic Province: An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin (Fenneman 1946; Sahrhaftig 1975).

Pleistocene (Ice Age): An epoch in the Quaternary Period of geologic history lasting from approximately 268 million to 10,000 years ago. The Pleistocene was an epoch of multiple glaciations, during which continental glaciers covered nearly one fifth of the earth’s surface land.

Pliocene: The Pliocene Epoch is the time period in the geologic time scale that extends from approximately 5.3 to 2.6 million 5.332 million to 2.588 million years before present.

PM_{10} (inhalable particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 50 microns penetrate to the lower respiratory tract (tracheo-bronchial airways and alveoli in the lungs). In a regulatory context, PM_{10} is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 9.5-10.5 microns and an maximum aerodynamic diameter collection limit less than 50 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 10 microns and less than 50 percent for particles with aerodynamic diameters larger than 10 microns.

$PM_{2.5}$ (fine particulate matter): A fractional sampling of suspended particulate matter that approximates the extent to which suspended particles with aerodynamic equivalent diameters smaller than 6 microns penetrate into the alveoli in the lungs. In a regulatory context, $PM_{2.5}$ is any suspended particulate matter collected by a certified sampling device having a 50 percent collection efficiency for particles with aerodynamic equivalent diameters of 2.0-2.5 microns and an maximum aerodynamic diameter collection limit less than 6 microns. Collection efficiencies are greater than 50 percent for particles with aerodynamic diameters smaller than 2.5 microns and less than 50 percent for particles with aerodynamic diameters larger than 2.5 microns.

Precursor: A compound or category of pollutant that undergoes chemical reactions in the atmosphere to produce or catalyze the production of another type of air pollutant.

Prehistoric: Refers to the period wherein American Indian cultural activities took place before written records wherein Native American cultures were and not yet influenced by contact with nonnative culture(s).

Programmatic Agreement (PA): A document that details the terms of a formal, legally binding agreement between one party and other state and/or federal agencies. A PA establishes a process for consultation, review, and compliance with one or more federal laws, most often with those federal laws concerning historic preservation.

Project Disturbance Area: The Project Disturbance Area encompasses the disturbance resulting from the proposed construction of the PSEGS, including solar fields, transmission facilities, office and maintenance buildings, lay down area, leach fields, and other components, including the impact acreage of the gen-tie line and the natural gas line corridor and switch yard.

Protocol Agreement (Protocol): A modified version of the NPA. An agreement developed pursuant to the provisions of the Bureau of Land Management's (BLM) National Programmatic Agreement. The BLM's California Protocol is adapted to the unique requirements of managing cultural resources on public lands in California and portions of Nevada managed by the California BLM. The Protocol describes the manner in which the BLM and California State Historic Preservation Officer shall cooperatively implement the National Programmatic Agreement. The Protocol is used as the primary management guidance for BLM offices in the state.

Q

Quaternary Age: The most recent of the three periods of the Cenozoic Era. In the geologic time scale of the International Commission on Stratigraphy, it follows the Tertiary Period, spanning time from approximately 2.6 ± 0.005 million years ago to the present. The Quaternary includes two geologic epochs: the Pleistocene and the Holocene.

R

Rehabilitation: A management alternative and/or practice which restores landscapes to a desired scenic quality as defined in BLM Manual 8400 – Visual Resource Management, April 5, 1984.

Restoration (Cultural Resource): The process of accurately reestablishing the form and details of a property or portion of a property together with its setting, as it appeared in a particular period of time. Restoration may involve removing later work that is not in itself significant and replacing missing original work. Also see Stabilization (Cultural Resource).

Riparian: Situated on or pertaining to the bank of a river, stream, or other body of water. Normally describes plants of all types that grow rooted in the water table or sub-irrigation zone of streams, ponds, and springs.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Route: "Routes" represents a group or set of roads, trails, and primitive roads that represents less than 100% of the BLM transportation system. Generically, components of the transportation system are described as routes.

S

Saleable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed by sales to individuals or companies or special permits to local governments. See also Mineral Materials Disposal.

Scale: The proportionate size relationship between an object and the surroundings in which the object is placed.

Scenery: The aggregate of features that give character to a landscape.

Scenic Area: An area whose landscape character exhibits a high degree of variety and harmony among the basic elements which results in a pleasant landscape to view.

Scenic Quality: The relative worth of a landscape from a visual perception point of view.

Scenic Quality Evaluation Key Factors: The seven factors (land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications) used to evaluate the scenic quality of a landscape.

Scenic Quality Ratings: The relative scenic quality (A, B, or C) assigned a landscape by applying the scenic quality evaluation key factors; scenic quality A being the highest rating, B a moderate rating, and C the lowest rating.

Scenic Values: See Scenic Quality and Scenic Quality Ratings.

Secretary of the Interior: The U.S. Department of the Interior is in charge of the nation's internal affairs. The Secretary serves on the President's cabinet and oversees such agencies as the Bureau of Land Management, U.S. Geological Survey, and National Park Service appoints citizens to the National Park Foundation board.

Sedimentary Rocks: Rocks, such as sandstone, limestone, and shale, that are formed from sediments or transported fragments deposited in water. A rock such as sandstone, limestone, or shale resulting from the consolidation of loose sediment that has accumulated in layers and been deposited by water, air, or ice; or a rock such as salt formed by precipitation from solution; or an organic rock such as limestone consisting of the remains or secretions of plants and animals.

Sensitivity Levels: Measures (e.g., high, medium, and low) of public concern for scenic quality.

Simulation: A realistic visual portrayal which demonstrates the perceivable changes in landscape features caused by a proposed management activity. This is done through the use of photography, artwork, computer graphics, and other such techniques.

Solar Programmatic Environmental Impact Statement, or Solar PEIS: The BLM issued a final Programmatic EIS for Solar Energy Development in Six Southwestern States (Arizona, California, Colorado, Nevada, New Mexico, and Utah) in July 2012 and signed the associated Record of Decision in October 2012. Through the Solar PEIS, the BLM evaluated actions that would facilitate utility-scale solar energy development on public lands.

Special Status Species: Federal- or state-listed species, candidate or proposed species for listing, or species otherwise considered sensitive or threatened by state and federal agencies.

Specular Reflection: Also known as direct reflection, regular reflection, or mirror reflection. The reflection of electron magnetic rays without scattering or diffusion. In specular reflection, the angle at which the wave is incident on the reflecting surface is equal to the angle at which it is reflected from that surface. See Glint; Glare.

Stabilization: Introducing chemical, mechanical, or structural elements to retard the deterioration of cultural resources. For example, chemical measures include the application of polymers to protect rock art; mechanical measures include the jacking of floors in historic buildings; structural measures include the replacement of mortar in brick or adobe walls.

State Water Resources Control Board (SWRCB): Created in 1967, joint authority of water allocation and water quality protection enables the State Water Board to provide comprehensive protection for California's waters. The mission of the nine Regional Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology.

Subsurface: Of or pertaining to rock or mineral deposits which generally are found below the ground surface.

Sulfur Dioxide (SO2): A pungent, colorless, and toxic oxide of sulfur formed primarily by the combustion of fossil fuels. It is a respiratory irritant, especially for asthmatics. A criteria pollutant in its own right, and a precursor of sulfate particles and atmospheric sulfuric acid.

T

Taphonomy: The study of the processes by which animal bones and shells and plant and other fossil remains are transformed after deposition.

Tertiary: The Tertiary Period marks the beginning of the Cenozoic Era. It began approximately 65 million years ago and lasted more than 63 million years, until approximately 2.6 million years ago. The Tertiary is made up of 5 epochs: the Paleocene, Eocene, Oligocene, Miocene, and Pliocene.

Texture: The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

Toxic: Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Traditional Cultural Properties: Areas associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity. Also referred to as traditional cultural places and places of traditional cultural importance.

Trail: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

V

Vandalism (Cultural Resource): Malicious damage or the unauthorized collecting, excavating, or defacing of cultural resources. Section 6 of the Archaeological Resources Protection Act states that "no person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands…unless such activity is pursuant to a permit issued under section 4 of this Act."

Variables: Factors influencing visual perception including distance, angle of observation, time, size or scale, season of the year, light, and atmospheric conditions.

Variety: The state or quality of being varied and having the absence of monotony or sameness

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor. Protection, rehabilitation, or enhancement is desirable and possible. BLM Instruction Memorandum No. 2009-167, Attachment 1-7 further defines a viewshed as the area seen from a particular location to the visible horizon. Delineation of the viewshed from the proposed project location must extend out from the top elevation of the proposed facilities rising at the project location expanded out to 5.5 feet elevation above the ground of the visible horizon.

Visual Contrast: See Contrast.

Visual Quality: See Scenic Quality.

Visual Resources: The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Resource Management Classes: Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Values: See Scenic Quality.

W

Wetlands: Permanently wet or intermittently water-covered areas, such as swamps, marshes, bogs, potholes, swales, and glades.

Wilderness Area: An area formally designated by Congress as part of the National Wilderness Preservation System as defined in the Wilderness Act of 1964 (78 Stat.891), Section 2(c).

Wilderness Study Area: A roadless area or island that has been inventoried and found to have wilderness characteristics as described in section 603 of FLPMA and section 2(c) of the Wilderness Act of 1964 (78 Stat. 891). Source for both of these is BLM's IMP and Guidelines for Lands Under Wilderness Review (December 1979).

CHAPTER 8
References

Chapter 2: Proposed Action and Alternatives

BLM (Bureau of Land Management), 2010. Final Environmental Impact Statement for the Palen Solar Power Project (PSPP). Prepared by Environmental Science Associates (ESA) for the BLM. 2010.

CEC (California Energy Commission), 2013. Preliminary Staff Assessment for the Palen Solar Electric Generating System, Amendment to the Palen Solar Power Project. CEC-700-2013-003-PSA, Docket Number 09-AFC-7C (June).

FAA (Federal Aviation Administration), 2007. Obstruction Marking and Lighting, Advisory Circular AC 70/7460-1K. U.S. Department of Transportation (February).

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen, BLM, et al. re: Data Requests (June 13).

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen, BLM, et al. re: Updated Revised Table 2-3 from the POD (June 14).

Palen Solar III, LLC., 2013. Palen Solar Electric Generating System (Formerly Palen Solar Power Project), Revised Plan of Development, File Number CACA 48810. (February 8).

Palen Solar Holdings, LLC., 2012. Petition for Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Section 3.2: Air Resources

CARB (California Air Resources Board), 2012. Ambient Air Quality Standards, last updated June 7, 2012. Available at: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf> (Accessed May 22, 2013).

EPA (U.S. Environmental Protection Agency), 2013a. Particulate Matter Regulatory Actions webpage, last updated March 18, 2013. Available at: <http://www.epa.gov/airquality/particlepollution/actions.html#dec12> (Accessed May 23, 2013).

EPA (U.S. Environmental Protection Agency), 2013b. Ground-level Ozone Regulatory Actions webpage, last updated March 18, 2013. Available at: <http://www.epa.gov/glo/actions.html> (Accessed May 23, 2013).

Section 3.3: Climate Change

CARB (California Air Resources Board), 2013. California Greenhouse Gas Inventory for 2000-2010 – by Category as Defined in the Scoping Plan, last updated February 19, 2013. Available at: <http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-10_2013-02-19.pdf> (Accessed February 19, 2013).

EPA (U.S. Environmental Protection Agency), 2012. Sources of Greenhouse Gas Emissions. Available at: <http://www.epa.gov/climatechange/ghgemissions/sources.html> (Accessed April 2, 2013).

Section 3.4: Cultural Resources

Contreras, Tiffany, Colin Recksieck, Matthew Tennyson, and M.K. Meiser, 2013. *Cultural Resources Class I Report for the Palen Solar Electric Generating System Project, Riverside County, California*, Prepared for the BLM (June).

Section 3.5: Environmental Justice

CEQ (Council on Environmental Quality), 1997. *Environmental Justice Guidance Under the National Environmental Policy Act, 1997*.

U.S. Census Bureau, 2013. 2007-2011 American Community Survey 5-year estimates for selected geographies. Available at: <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml> (Accessed May 26, 2013).

Section 3.6: Lands and Realty

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen, BLM, et al. re: Data Requests (June 13).

Section 3.7: Livestock Grazing

BLM CDD (Bureau of Land Management California Desert District), 2002. *Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final EIS*. Section 3.9 Multiple Use Classes. (July).

Section 3.11: Paleontological Resources

SWCA Environmental Consultants (SWCA), 2009. *Paleontological Resources Assessment for the Palen Solar Power Project, Riverside County, California*. Prepared for AECOM Environment (July).

Section 3.12: Public Health and Safety

ACRP (Airport Cooperative Research Program), 2011. *Investigating Safety Impacts of Energy Technologies on Airports and Aviation*.

AECOM, 2009. Phase I Environmental Site Assessment of Proposed Solar Power Plant Site Located in Eastern Riverside County, California (May).AirNav, 2013. *CN64 Desert Center Airport.* Available at: <http://www.airnav.com/airport/CN64> (Accessed May 20).

CalRecycle, 2011. *Jurisdiction Diversion/Disposal Rate Detail.* Available at: <http://www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionDetail.aspx?JurisdictionID=410&Year=2011> (Accessed May 13, 2013).

CalRecycle, 2013, email communication with Karen Lancelle, ESA, regarding Clean Harbors disposal facility, May 15.

Environmental Data Resources (EDR), 2013. EDR DataMapTM Area Study. (June 10).

FAA (Federal Aviation Administration), 2006. *Safety Risk Analysis of Aircraft Overflight of Industrial Exhaust Plumes*. DOT-FAA-AFS-420-06-01. (January).

FAA (Federal Aviation Administration), 2007. *Hazardous Wildlife Attractants on or near Airports*, Advisory Circular No. 150/5200-33B, August 28.

FAA (Federal Aviation Administration), 2010a. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*. FAA-ARP-TR-10-1. (November).

FAA (Federal Aviation Administration), 2010b. Final rule: Safe, Efficient Use and Preservation of Navigable Airspace. 14 CFR Part 77, Federal Register 75 (139), July 21.

FAA (Federal Aviation Administration), 2013. *Airport Master Record.* (Effective, May 2).

RCWMD (Riverside County Waste Management Department), 2013a. *Landfill and Transfer Station Hours and Locations.* Available at: <http://www.rivcowm.org/opencms/landfill_info/landfill_hours.html> (Accessed May 14).

RCWMD (Riverside County Waste Management Department), 2013b. Telephone notes regarding Desert Center Landfill. (May 14).

U.S. Census, 2013.*Census Block Shapefiles with 2010 Census Population and Housing Units Counts.* Available at: <http://www.census.gov/geo/www/tiger/tgrshp2010/pophu.html> (Accessed May 14).

EPA (U.S. Environmental Protection Agency), 2013. *EPA Activities in Kettleman City Area.* Available at: <http://www.epa.gov/region9/kettleman/pcb-app.html> (Accessed May 14).

Section 3.13: Recreation

Lake Tamarisk Desert Resort, 2013a. Lake Tamarisk Desert Resort, a 55+ Community for Active Seniors. Available at: <http://www.laketamariskdesertresort.com/Pages/default.aspx> (Accessed May 17).

Lake Tamarisk Desert Resort, 2013b. Amenities. Available at: <http://www.laketamariskdesertresort.com/Pages/aboutus.aspx>(Accessed May 17).

NPS (National Park Service), 2013a. Joshua Tree National Park, A Desert Park. Available at: <http://www.nps.gov/jotr/planyourvisit/desertpark.htm> (Accessed May 17).

NPS (National Park Service), 2013b. Things To Do. Available at: <http://www.nps.gov/jotr/planyourvisit/things2do.htm> (Accessed May 17).

NPS (National Park Service), 2013c. Recreation Visitors, Joshua Tree NP. Available at: <https://irma.nps.gov/Stats/SSRSReports/Park Specific Reports/All Recreation?Park=JOTR> (Accessed May 17).

Section 3.14: Social and Economic Setting

Arizona Department of Administration, 2013. Local Area Unemployment Statistics (LAUS) Data, La Paz County, 2007 to 2012. Available at: <http://azstats.gov/laus-data-query-tool/> (Report generated May 22).

Bureau of Economic Analysis, 2012. CA25N Total Full-Time and Part-Time Employment by NAICS Industry. Available at: <https://www.bea.gov/iTable/print.cfm?fid=F41BDE908CD743E2059F9ED59FCD66E34726F2B525F3CA7C1167EB28FE83EE68FB4A2864C89C5FEBA98666325246F> (Accessed May 22, 2013).

California State Controller's Office, 2012. Counties Annual Report, FY 2010-2011. Table 4: Summary of General County Financing Sources, Table 5: Summary of County Expenditures by Function and Activity. Available at: <http://www.sco.ca.gov/Files-ARD-Local/LocRep/counties_reports_1011counties.pdf> (Accessed May 2013).

EDD (Employment Development Department), 2012. 2010-2020 Occupational Employment Projections, Riverside-San Bernardino-Ontario Metropolitan Statistical Area (Riverside and San Bernardino Counties). Available at: <http://www.calmis.ca.gov/file/occproj/rive$occproj.xls> (Accessed May 22, 2013).

EDD (Employment Development Department), 2013a. Report 400 C, Monthly Labor Force Data for Counties, Annual Average 2012 – Revised. <http://www.calmis.ca.gov/file/lfhist/12aacou.pdf>.

EDD (Employment Development Department), 2013b. Riverside County Industry Employment & Labor Force - by Annual Average, March 2012 Benchmark. Available at: <http://www.calmis.ca.gov/file/indhist/rivehaw.xls> (Accessed May 22, 2013).

EDD (Employment Development Department), 2013c. San Bernardino County Industry Employment & Labor Force - by Annual Average, March 2012 Benchmark. Available at: <http://www.calmis.ca.gov/file/indhist/sanbrhaw.xls> (Accessed May 22, 2013).

EDD (Employment Development Department), 2013d. Unemployment Rates (Labor Force), Riverside County, 2007 to 2012. Available at: <http://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/areaselection.asp?tablename=labforce> (Report generated May 22, 2013).

EDD (Employment Development Department), 2013e. Unemployment Rates (Labor Force), Riverside-San Bernardino-Ontario MSA, 2007 to 2012. Available at: <http://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/areaselection.asp?tablename=labforce> (Report generated May 22, 2013).

Section 3.17: Transportation and Public Access – Off Highway

Caltrans (California Department of Transportation), 2012. *2011 Traffic Volumes of the California State Highway System*. (2012).

ESA, 2013. *Roadway Segment Level of Service (LOS) Calculations*, May.

Section 3.18: Vegetation Resources

AECOM Environment, 2010. Data Responses, Set 1 (#1-280), January 22, 2010.

BLM CDD (Bureau of Land Management California Desert District), 2002. *Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final EIS*. Section 3.9 Multiple Use Classes, July.

BLM (Bureau of Land Management), 2011. Final Environmental Impact Statement for the Palen Solar Power Project (PSPP). Prepared by Environmental Science Associates (ESA) for the BLM.

CCH (Consortium of California Herbaria), 2013. Search results for taxa from CNPS Inventory in Riverside County, retrieved July 9, 2013. Available at: <http://ucjeps.berkeley.edu/consortium/>.

CDFW (California Department of Fish and Wildlife), 2013. Natural Diversity Database Special Vascular Plants, Bryophytes, and Lichens List. Quarterly Publication. 73 pp. April 2013.

Cal-IPC (California Invasive Plant Council), 2006. California Invasive Plant Inventory. Cal IPC Publication 2006-02. Available at: <http://www.cal-ipc.org>.

Cal-IPC (California Invasive Plant Council), 2013. California Invasive Plant Inventory Database. Available at: <http://www.cal-ipc.org/paf.> (Accessed May 2013).

California Native Plant Society (CNPS), 2013. CNPS Inventory of Rare and Endangered Plants, Riverside County. Available at: < http://www.rareplants.cnps.org/>, (Accessed June 14, 2013).Consortium of California Herbaria, 2013

Jepson, Willis Linn, and James C. Hickman, 1993. *The Jepson manual: higher plants of California*. Berkeley, CA: University of California Press.

Karl, Alice, 2013a. Summary of Spring Wildlife and Plant Surveys. Letter report to California Energy Commission dated May 16, 2013.

Karl, Alice, 2013b. PSEGS Summary of Survey for Jurisdictional State Waters Palen Solar Electric Generating System docket No. (09-AFC-7C). Letter report submitted to California Energy Commission, 5 June 2013

Munz, Philip A, and David D. Keck, 1973. *A California flora and supplement*. Berkeley, CA: University of California Press.

Palen Solar III, LLC., 2013. Palen Solar Electric Generating System (Formerly Palen Solar Power Project), Revised Plan of Development, File Number CACA 48810. (February 8, 2013).

Palen Solar Holdings, LLC., 2012. Petition to Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palen Solar Holdings, LLC., 2013. Petition to Amend (09-AFC-7C), Supplemental No. 1. Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (February).

Solar Millennium, 2009. Section 5.3 Biological Resources in Application for Certification Vol 1, August 24, 2009.

Section 3.19: Visual Resources

3DScape. 2013. Palen Solar Electric Generating System Visual Resources Analysis (Docket No. 09-AFC-07C). Attachment – A: Analysis. (May)

BLM, (Bureau of Land Management), 1986. Handbook H-8410-: *Visual Resource Inventory*. Available at: <http://www.blm.gov/nstc/VRM/8410.html> (Accessed July 8, 2010).

CEC (California Energy Commission) Genesis RSA (Revised Staff Assessment), 2010. *Genesis Solar Energy Project Revised Staff Assessment.* (June 2010).

U.S. Census Bureau, 2013. 2007-2011 American Community Survey 5-year estimates for selected geographies. Available at: <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml> (Accessed May 26, 2013).

Section 3.21: Wild Horse and Burro Resources

BLM CDD (Bureau of Land Management California Desert District), 2002. *Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final EIS*. Section 3.9 Multiple Use Classes. (July 2002).

Section 3.23 Wildlife Resources

AECOM Environment, 2010. Data Responses, Set 1 (#1-280), January 22, 2010.

Bloom Biological, Inc., 2013a. PSEGS Spring 2013 Golden Eagle Nest Survey Results Interim Report, Palen Solar Electric Generating System Docket No. (09-AFC-7C). Submitted to the California Energy Commission, June 5, 2013.

Bloom Biological, Inc., 2013b. PSEGS Winter 2013 Golden Eagle Survey Results. Prepared for BrightSource Energy, Inc. March.

Bloom Biological, Inc, 2013c. PSEGS Preliminary Spring 2013 Pre-construction Avian Field Survey Results. (March)

BLM (Bureau of Land Management), 2010. Final Environmental Impact Statement for the Palen Solar Power Project (PSPP). Prepared by Environmental Science Associates (ESA) for the BLM. 2010.

BLM (Bureau of Land Management), 2012. Proposed Plan Amendment/Final EIS for the McCoy Solar Energy Project. December.

BLM CDD 2002. Bureau of Land Management California Desert District and California Department of Fish and Game Inland, Desert, and Eastern Sierra Region. Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final EIS, July 2002.

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

CDFG, 2012. Staff Report on Burrowing Owl Mitigation. March 7.

CDFW (California Department of Fish and Wildlife), 2013. Natural Diversity Database Special Vascular Plants, Bryophytes, and Lichens List. Quarterly Publication. 73 pp. April 2013

Fitton, S. 2008. Le Conte's Thrasher (Toxostoma lecontei). In. Shuford, W. D., and Gardali, T., eds. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen et al., BLM, re: Items required for the Administrative Supplemental Draft EIS for Palen (June 12).

Karl, Alice, 2013a. Summary of Spring Wildlife and Plant Surveys. Letter report to California Energy Commission dated May 16, 2013.

Karl, Alice, 2013b. PSEGS Summary of Survey for Jurisdictional State Waters Palen Solar Electric Generating System docket No. (09-AFC-7C). Letter report submitted to California Energy Commission, 5 June 2013

Palen Solar Holdings, LLC., 2012. Petition to Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palen Solar Holdings, LLC., 2013a. Petition to Amend (09-AFC-7C), Supplemental No. 1. Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (February).

Palen Solar Holdings, LLC, 2013b. Response to CEC Staff Data Request Set 3 (40-72) in support of the Petition to Amend for the PSEGS. Submitted to the California Energy Commission. June.

Palen Solar III, LLC., 2013. Palen Solar Electric Generating System (Formerly Palen Solar Power Project), Revised Plan of Development, File Number CACA 48810. (February 8, 2013).

Solar Millennium, 2009. Section 5.3 Biological Resources in Application for Certification Vol 1, August 24, 2009

Western Bat Working Group (WBWG), 2005. Species Account for Pallid Bat (*Antrozous pallidus*). Available Online at: http://wbwg.org.

Section 4.1: Introduction

CEQ (Council on Environmental Quality), 1997. *Considering Cumulative Effects Under the National Environmental Policy Act.* (January 1997).

BLM (Bureau of Land Management), 2011a. Desert Sunlight Solar Farm Project Final EIS and CDCA Plan Amendment, Section 3.18, Cumulative Analysis, pages 3.18-8 through 3.18-4. Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/desert_sunlight.Par.1853.File.dat/Desert%20Sunlight%20FEIS%20chapter%203.pdf>.

BLM (Bureau of Land Management), 2011b. L.H. Renewables Eagle Mountain CACA 51664.

BLM (Bureau of Land Management), 2013a. CDD Renewable Energy Projects and Utility Corridors Projects as of February 19, 2013. Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy/application_maps.Par.30605.File.dat/cdd_application_map.pdf>.

BLM (Bureau of Land Management), 2013b. BLM California Solar Applications and Authorizations, May 2013. Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy/solar.Par.84447.File.dat/BLM%20Solar%20Apps%20and%20Auths.pdf> (Accessed March 27, 2013).

BLM (Bureau of Land Management), 2013c. BLM California Wind Applications and Authorizations, March 2013. Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pa/energy.Par.5556.File.dat/BLM%20Solar%20Apps%20&%20Auths%20July%20 2012.pdf> (Accessed March 27, 2013).

BLM (Bureau of Land Management), 2013d. BLM Arizona Active Energy Projects. Available at: <http://www.blm.gov/az/st/en/prog/energy/active.html> (Accessed March 27, 2013).

BLM (Bureau of Land Management), 2013e. BLM Arizona Pending Solar Projects. Available at: <http://www.blm.gov/az/st/en/prog/energy/solar/pend-solar.html> (Accessed March 27, 2013).

BLM (Bureau of Land Management), 2013f. Arizona BLM Solar and Wind Projects, March 4, 2013. Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/energy.Par.18131.File.dat/AZSolar_Wind_Map.pdf>.

BLM (Bureau of Land Management), 2013g. BLM Nevada Fast Facts about Renewable Energy Projects. Available at: <http://www.blm.gov/nv/st/en/prog/energy/fast-track_renewable.html> (Accessed March 27, 2013).

BLM (Bureau of Land Management), 2013h. Active Renewable Energy Projects. Available at: <http://www.blm.gov/wo/st/en/prog/energy/renewable_energy/active_renewable_projects.html> (Accessed April 3, 2013).

BrightSource Energy, Inc., 2013. Applicant's Status Report in the Matter of Application for Certification for the Rio Mesa Solar Electric Generating Facility. Available at: <http://www.energy.ca. gov/sitingcases/riomesa/documents/applicant/2013-04-01_Applicant_status_report_01_ TN-70187.pdf> (Accessed April 1, 2013).

City of Blythe, 2013. Planning Department. Available at: <http://www.cityofblythe.ca.gov/index.aspx?nid=27> (Accessed March 27, 2013).

CEC (California Energy Commission), 2010. Revised Staff Assessment, Blythe Solar Power Project, CEC-700-2010-004-REV1-PT2, (July, 2010).

DOE (Department of Energy) and Bureau of Land Management (BLM), 2011. Supplement to the Draft Solar PEIS, Appendix C: Action Plans for Solar Energy Zones to be Carried Forward. Available at: <http://solareis.anl.gov/documents/supp/Appendix_C.pdf>.

Riverside County, 2013a. Active Conditional Use Permit Applications. Available at: <http://www.rctlma.org/online/content/reports_active_cups.aspx> (Accessed March 27, 2013).

Riverside County, 2013b. Active Public Use Permit Applications. Available at: <http://www.rctlma.org/online/content/reports_active_pups.aspx> (Accessed March 27, 2013).

Riverside County Planning Department, 2005. Agency Notice of Preparation of an Environmental Impact Report Specific Plan No. 00339 (Paradise Valley). Available at: <http://www.tlma.co.riverside.ca.us/planning/content/geninfo/nops/sp339_nop.pdf>.

Riverside County Planning Department, 2011. Agency Notice of Preparation of an Draft Environmental Impact Report (Blythe Mesa I Sole Project). Available at: <http://www.tlma.co.riverside. ca.us/planning/content/hearings/dh/dh2011/agendas/ blytheDH_121211/2.1_sr.pdf> (Accessed November 16, 2011).

Section 4.2: Impacts to Air Resources

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen et al., BLM, re: Items required for the Administrative Supplemental Draft EIS for Palen (June 12).

Midwest Research Institute, 1996. *Improvement of Specific Emission Factors* (BACD Project No. 1), MRI Project No. 3855, prepared by Midwest Research Institute for South Coast Air Quality Management District. March 29, 1996.

Palen Solar Holdings, LLC. (PSH), 2013. Petition to Amend (09-AFC-7C), Supplement No. 2 Complete Air Quality & Public Health Sections, Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission. (March).

Section 4.3: Impacts on Global Climate Change

CEQ (Council on Environmental Quality), 2010. *Draft NEPA Guidance on consideration of the effects of climate change and greenhouse gas emissions*. February 18, 2010.

EPA (U.S. Environmental Protection Agency), 2011a. Greenhouse Gas Reporting Program. Available at: <http://www.epa.gov/climatechange/emissions/ghgrulemaking.html> (Accessed December 6, 2011).

EPA (U.S. Environmental Protection Agency), 2011b. Clean Air Act Permitting for Greenhouse Gas Emissions – Final Rules Fact Sheet. Available at: <http://www.epa.gov/NSR/ghgdocs/ 20101223factsheet.pdf>.

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen et al., BLM, re: Items required for the Administrative Supplemental Draft EIS for Palen (June 12).

Palen Solar Holdings, LLC. (PSH), 2012. Petition to Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palen Solar Holdings, LLC. (PSH), 2013. Petition to Amend (09-AFC-7C), Supplement No. 2 Complete Air Quality & Public Health Sections, Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission. (March).

Section 4.4: Impacts on Cultural Resources

BLM (Bureau of Land Management), 2011a. Desert Sunlight Solar Farm California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement (April). Available at: <http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html>.

BLM (Bureau of Land Management), 2011b. Record of Decision for the Desert Sunlight Solar Farm Project and Amendment to the California Desert Conservation Area Land Use Management Plan Riverside County, California (August).

Section 4.6: Impacts on Lands and Realty

BLM (Bureau of Land Management), 2011a. United States Department of the Interior, Bureau of Land Management and United States Department of Agriculture, Forest Service, Record of Decision for Devers-Palo Verde No. 2 Transmission Line Project (July). Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings.Par.34144.File.dat/DPV2ROD.pdf>.

BLM (Bureau of Land Management), 2011b. Right-of-Way Lease/ Grant CACA-053059 Issued Rental Determined Monitoring Determined (September 19). Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/general_-_pssc.Par.16025.File.dat/DPV2%20ROW-Decsion%20Ltr-NTP%20Package_9-19-2011%20508%20Version.pdf>.

Section 4.9: Impacts on Noise

FTA (Federal Transit Authority), 2006. Transit Noise and Vibration Impact Assessment, May 2006.

Section 4.10: Impacts on Paleontological Resources

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen et al., BLM, re: Items required for the Administrative Supplemental Draft EIS for Palen. (June 12).

SWCA Environmental Consultants (SWCA), 2009. *Paleontological Resources Assessment for the Palen Solar Power Project, Riverside County, California*. Prepared for AECOM Environment, July 2009.

Section 4.11: Impacts on Public Health and Safety

CalRecycle, 2004. Construction/Demolition and Inert Debris Tools and Resources: Solid Waste Cleanup Program Weights and Volumes for Project Estimates, January 23, 2004. Available at: <http://www.calrecycle.ca.gov/SWFAcilities/CDI/Tools/Calculations.htm>.

Dorian Cooley, 2013. Personal telephone communication between Riverside County Fire Department Deputy Chief Dorian Cooley and Environmental Science Associates. June 17, 2013.

FAA (Federal Aviation Administration), 2007. Advisory Circular 70/7460-1K (Change 2), *Obstruction Marking and Lighting*. February 1, 2007.

FAA (Federal Aviation Administration), 2010. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*. FAA-ARP-TR-10-1. (November).

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen, BLM, et al. re: Temperature of the thermal plume (June 28).

Lees, F.P. 1998. *Loss* Prevention *in the Process Industries*, Vols. I, II and III. Second Edition, Butterworths.

Palen Solar Holdings, LLC., 2012. Petition to Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palen Solar Holdings, LLC., 2013. Petition to Amend (09-AFC-7C), SUPPLEMENT NO. 2 Complete Air Quality & Public Health Sections, Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission. (March).

Palen Solar III, LLC., 2013a. Palen Solar Electric Generating System (Formerly Palen Solar Power Project), Revised Plan of Development, File Number CACA 48810. (February 8, 2013).

Palen Solar III, LLC, 2013b. Table 1: Potential Wastes Generated During the Construction Phase at the PSEGS Facility, in Data Response dated June 12, 2013.

Palen Solar III, LLC, 2013c. Table 2: Potential Wastes Generated During PSEGS Operation, in Data Response dated June 12, 2013.

U.S. Environmental Protection Agency (U.S. EPA), 1997. Appendix B: Standard Volume-to-Weight Conversion Factors, in *Measuring Recycling: A Guide for State and Local Governments*.

Waste Management, 2013. *Used Oil and Filters*. Available at: <http://www.wm.com/location/california/nevada_county/recycling/used-oil.jsp> (Accessed June 19, 2013).

Section 4.13: Social and Economic Impacts

BLM (Bureau of Land Management), 2005. Desert Southwest Transmission Line Final EIS, Section 3.8 Socioeconomics. Available at: <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pdfs/palmsprings_pdfs/desert_southwest/desert_southwest_eis.Par.28418.File.dat/3.8-Socioeconomics.pdf>.

BLM (Bureau of Land Management), 2010a. Blythe Solar Power Project PA/FEIS Chapter 4, Section 4.13, Social and Economic Impacts, page 4.13-2.

BLM (Bureau of Land Management), 2010b. Genesis Solar Energy Project PA/FEIS Chapter 4, Section 4.13, Social and Economic Impacts, pages 4.13-2 and 4.13-10.

BLM (Bureau of Land Management), 2011. Desert Sunlight Solar Farm Project Final EIS and CDCA Plan Amendment Chapter 4, Section 4.13, Social and Economic Impacts, pages 4.13-2 and 4.13-8.

BLM (Bureau of Land Management), 2012. McCoy Solar Energy Project Final EIS and CDCA Plan Amendment Chapter 4, Section 4.15, Social and Economic Impacts, pages 4.15-2 and 4.15-5.

CPUC (California Public Utilities Commission), 2006. Devers–Palo Verde No. 2 Transmission Line Project Final EIR/EIS, Section D.14, Socioeconomics, page D.14-19. Available at: <http://www.cpuc.ca.gov/environment/info/aspen/dpv2/feir/d14_socioeconomics.pdf>.

CPUC (California Public Utilities Commission), 2011. Devers–Palo Verde No. 2 Transmission Line Project Colorado River Substation Expansion Section G, Other CEQA Considerations. Available at: <http://www.cpuc.ca.gov/environment/info/aspen/dpv2/sdeir/g_otherceqa.pdf>.

EDD (Employment Development Department), 2012. 2010-2020 Occupational Employment Projections, Riverside-San Bernardino-Ontario Metropolitan Statistical Area (Riverside and San Bernardino Counties). Available at: <http://www.calmis.ca.gov/file/occproj/rive$occproj.xls> (Accessed May 22, 2013).

EDD (Employment Development Department), 2013a. San Bernardino County Industry Employment and Labor Force – by annual average, March 2012 Benchmark. Available at: < http://www.calmis.ca.gov/htmlfile/msa/rivsbern.htm> (Accessed July 5, 2013).

EDD (Employment Development Department), 2013b. Riverside County Industry Employment and Labor Force – by annual average, March 2012 Benchmark. Available at: <http://www.calmis.ca.gov/htmlfile/msa/rivsbern.htm> (Accessed July 5, 2013).

Section 4.16: Impacts on Transportation and Public Access – Off Highway Vehicle Resources

Palen Solar Holdings, LLC., 2012. Petition for Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

ESA, 2013. *Roadway Segment Level of Service (LOS) Calculations*, May.

Riverside County, 2009. Chapter 4: Circulation Element [in Riverside County General Plan].

Section 4.17: Impacts on Vegetation Resources

BLM (Bureau of Land Management), 2010. Final Environmental Impact Statement for the Palen Solar Power Project (PSPP). Prepared by Environmental Science Associates (ESA) for the BLM. 2010.

CDFW (California Department of Fish and Wildlife), 2013. Natural Diversity Database Special Vascular Plants, Bryophytes, and Lichens List. Quarterly Publication. 73 pp. April 2013.

Galati, Scott, 2013. Email communication with Janna Scott, ESA, regarding revised biology phasing impacts. June 14.

Karl, Alice, 2013a. Summary of Spring Wildlife and Plant Surveys. Letter report to California Energy Commission dated May 16, 2013.

Karl, Alice, 2013b. PSEGS Summary of Survey for Jurisdictional State Waters Palen Solar Electric Generating System docket No. (09-AFC-7C). Letter report submitted to California Energy Commission, 5 June 2013.

Palen Solar Holdings, LLC., 2012. Petition to Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palen Solar Holdings, LLC., 2013. Petition to Amend (09-AFC-7C), Supplemental No. 1. Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (February).

Palen Solar III, LLC., 2013. Palen Solar Electric Generating System (Formerly Palen Solar Power Project), Revised Plan of Development, File Number CACA 48810. (February 8, 2013).

Section 4.18: Impacts on Visual Resources

3DScape. 2013. Palen Solar Electric Generating System Visual Resources Analysis (Docket No. 09-AFC-07C). Attachment – A: Analysis. (May)

FAA (Federal Aviation Administration), 2007. Advisory Circular 70/7460-1K (Change 2), *Obstruction Marking and Lighting*. February 1, 2007.

Palen Solar Holdings, LLC. (PSH), 2012. Petition to Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palen Solar Holdings, LLC. (PSH), 2013a. Response to CEC Staff Data Request Set 2 (19-39) in support of the Petition to Amend for the Palen Solar Electric Generating System (09-AFC-7C) Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (May)

Palen Solar Holdings, LLC. (PSH), 2013b. Response to CEC Staff Data Request Set 3 (40-72) in support of the Petition to Amend for the Palen Solar Electric Generating System (09-AFC-7C) Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (June)

Sullivan, R.G., L. Kirchler, C. McCoy, J. McCarty, K. Beckman, and P. Richmond, 2012, "Visual Impacts of Utility-scale Solar Energy Facilities on Southwestern Desert Landscapes," National Association of Environmental Professionals 37th Annual Conference, Portland OR, May 21–24, 2012.

Truescape Consulting & Visual Facilitation (Truescape), 2013. Statement of Methodology of Truescape Limited, On Behalf of BrightSource Energy, Palen. (May)

Section 4.19: Impacts on Water Resources

CH2MHill, Preliminary Draft Construction Drainage, Erosion And Sedimentation Control Plan/ Stormwater Pollution Prevention Plan, Palen Solar Electric Generating System, Docket No. (09-Afc-7c), March 2013.

Galati, 2013. E-mail from Scott Galati, Centerline, to Frank McMenimen, BLM, et al. re: Data Requests (June 13).

Galati, 2013b. Email from Scott Galati, Centerline, to Janna Scott, ESA. Revised CVGB Water Budget Table (June 14).

Palen Solar III, LLC., 2013. Palen Solar Electric Generating System (Formerly Palen Solar Power Project), Revised Plan of Development, File Number CACA 48810. (February 8, 2013).

Palen Solar Holdings, LLC., 2012. Petition for Amend (09-AFC-7C), Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (December).

Palo Verde Irrigation District (PVID), 2002. Draft Environmental Impact Report for the Proposed Palo Verde Irrigation District Land Management, Crop Rotation, and Water Supply Program. May.

VTN Consulting. 2013. Development Palen SEGS Developed Conditions Drainage Assessment, WO# 7477, BSE Document Control Number: 7477HYD300 (January 28).

Section 4.20: Impacts on Wildland Fire Ecology

Palen Solar Holdings, LLC., 2013. Petition to Amend (09-AFC-7C), Supplemental No. 1. Submitted by Palen Solar Holdings, LLC. Submitted to California Energy Commission, Prepared by Centerline. (February).

Section 4.21: Impacts on Wildlife Resources

BrightSource Energy, Inc., 2013. Palen Solar Electric Generating System, Supplemental Biological Assessment, prepared for the Bureau of Land Management by Centerline. May 13, 2013.

FAA (Federal Aviation Administration), 2000. FAA Advisory Circular 70/7460-1K. U.S. Department of Transportation Federal Aviation Administration, effective: August 1, 2000.

Galati, Scott, 2013. Email communication with Janna Scott, ESA, regarding revised biology phasing impacts. June 14.

Gehring, Joelle and Paul Kerlinger, 2007. Avian collisions at communication towers: II. The role of Federal Aviation Administration obstruction lighting systems. Prepared for State of Michigan (March). Accessible Online at: http://www.darksky.org/assets/documents/ Report%20Avian%20Collision%20Study%20-Tower%20Lights.pdf

McCrary, Michael D., Robert L. McKernan, Ralph W. Schreiber, William D. Wagner, and Terry C. Sciarrotta, 1986. Avian Mortality at a Solar Energy Power Plant. Journal of Field Ornithology, 57(2): 135-141. Accessible Online at: http://www.energy.ca.gov/sitingcases/

genesis_solar/documents/others/testimony_centr_biological_diversity/exhibits/Exh.%20820.%20McCrary%20et%20al.%201986.%20%20Avian%20Mortality%20at%20solar%20energy%20plant.pdf

USFWS (U.S. Fish and Wildlife Service), 2012. Priority desert tortoise connectivity habitat identified by the U.S. Fish and Wildlife Service that overlaps with variance lands in the Final Solar PEIS. Prepared by Argonne National Laboratory. Map.

USFWS (U.S. Fish and Wildlife Service), 2013. Public Statement from Migratory Birds Division of U.S. Fish and Wildlife Service, Region 8 regarding the proposed Hidden Hills Solar Energy Generating System. April 3, 2013.