

**ATTACHMENT 2**

**Devers–Palo Verde  
No. 2 Transmission  
Line Project**

**Addendum to  
Final  
Environmental Impact Report**

*Prepared for:*

**California Public Utilities Commission**

*Prepared by:*

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# Devers–Palo Verde No. 2 Transmission Line Project EIR Addendum

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## 1. Background and Overview of Proposed Modification

This Addendum has been prepared in compliance with the California Environmental Quality Act (CEQA) in response to Southern California Edison Company’s (SCE) May 14, 2008 filing of a Petition for Modification of the California Public Utilities Commission’s (CPUC) Decision 07-01-040 approving the Devers-Palo Verde No. 2 Transmission Line Project (DPV2).

SCE filed Application 05-04-015 for a Certificate of Public Convenience and Necessity (CPCN) for the DPV2 Project with the CPUC on April 11, 2005. SCE’s proposed DPV2 consisted of two transmission segments. One was for a new 230-mile 500 kV line from the Harquahala Substation (in Arizona, near the Palo Verde nuclear power plant) to SCE’s Devers Substation (in North Palm Springs, California). The 500 kV portion would follow the existing SCE 500 kV transmission line, Devers–Palo Verde No. 1 (DPV1) and is referred to as “Devers-Harquahala.”

The proposed DPV2 Project also included upgrades to an additional 50 miles of 230 kV transmission lines west of the Devers Substation, which is referred to as “West of Devers.” Forty miles of 230 kV transmission line from Devers Substation to San Bernardino Junction at the western end of San Timoteo Canyon would be reconfigured and two separate 230 kV corridors, from San Bernardino Junction to SCE’s Mountain View Substation and from San Bernardino Junction to SCE’s Vista Substation would be reconducted. The entire Proposed Project would span 278 miles, with approximately 176 miles in California and 102 miles in Arizona.

For environmental review purposes, the CPUC has been the State Lead Agency, responsible for compliance with CEQA and the U.S. Bureau of Land Management (BLM) is the lead agency under the National Environmental Policy Act (NEPA). DPV2 was approved by the California Independent System Operator Corporation (CAISO) in February 2005. The CEQA process for the proposed DPV2 Project began with the CPUC’s issuance of the Notice of Preparation of an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) on October 21, 2005, along with an extensive scoping process. In December 2005, a comprehensive Scoping Report was issued that summarized issues and concerns received from the public and various agencies, which included copies of all written comments received. An addendum to the Scoping Report was issued in February 2006. A Draft EIR/EIS was prepared by the CPUC in compliance with CEQA Guidelines and published on May 4, 2006 and the submittal period for public comments on the Draft EIR/EIS was extended from July 5, 2006 to end on August 11, 2006.

The Final EIR/EIS, which documents the evaluation of approximately 35 alternatives, eight of which were carried through for full evaluation, including the EIR/EIS’s Environmentally Superior Alternative, was released October 24, 2006. The Environmentally Superior/Preferred Alternative (which was approved by the CPUC) is identical to the Proposed Project, except for inclusion of the Harquahala Junction Switchyard Alternative and the Alligator Rock-North of Desert Center Alternative. In addition,

the proposed West of Devers Upgrades would be constructed unless they are determined to be infeasible, in which case the Devers-Valley No. 2 Alternative would be constructed.

On January 25, 2007, the Commission certified the Final EIR/EIS and approved the DPV2 Project in D. 07-01-040 (Decision). The Arizona Corporation Commission (ACC) denied SCE's request for a Certificate of Environmental Compatibility for the Arizona-portion of the project on June 6, 2007. SCE has appealed the ACC's decision. SCE is also pursuing approval of the Arizona portion of DPV2 at the Federal Regulatory Commission (FERC), pursuant to FERC's authority to site transmission facilities under the Energy Policy Act of 2005.

Southern California Edison (SCE) filed the Petition for Modification (PFM) on May 14, 2008, and amended and supplemented the PFM on September 2 and 12, 2008, respectively. SCE's PFM requests modifications to D. 07-01-040 to permit SCE to construct the California portion of DPV2 in advance of any approval to construct the Arizona portion of DPV2. The PFM states that such a modification of the CPUC's decision regarding DPV2 is appropriate in light of the renewable resource potential in and around the California terminus of the DPV2 line, near Blythe, California. In the event that Arizona does not permit the portion of DPV2 in Arizona, DPV2 could be used to deliver renewable resources located in the Blythe area to California load centers. The PFM also requests authorization to construct the Midpoint Substation, near Blythe.

Pursuant to CEQA Guidelines Section 15164, the purpose of this Addendum is to document proposed modifications to the approved project and the impacts of those modifications. SCE does not seek any physical modifications to the DPV2 Project as reviewed in the Final EIR/EIS and approved in D. 07-01-040. Rather, it seeks to construct the California portion of DPV2, including the Midpoint Substation to provide transmission access to potential future renewable resources in the Blythe area. Consequently, this addendum is limited to describing the types of impacts/mitigations that would be associated with future potential renewable energy projects in the general area around Blythe, including impacts in the area identified by the California Renewable Energy Transmission Initiative (RETI) as the "East Riverside" Competitive Renewable Energy Zone (East Riverside CREZ). These future potential renewable resources are described in Section 2, below.

This review is necessarily limited. As discussed in Section 2, below, most of the future renewable energy projects that would interconnect to the California portion of DPV2 are in the preliminary planning stages and thus none of the projects are sufficiently detailed to allow meaningful, non-speculative review. In addition, the projects are being proposed by different entities, permitted by different agencies with separate schedules and environmental review processes. The projects and types of associated impacts are identified under each environmental discipline in this Addendum for the benefit of decision-makers and the public. Types of mitigation measures that would generally apply to these types of impacts are also listed.

In summary, because SCE does not propose any changes to the DPV2 Project, there would be no new or increased impacts associated with construction and operation of DPV2, and no new mitigation measures would be required to reduce impacts to less than significant levels beyond those presented in the Final EIR/EIS. Consequently, as discussed in Section 3 – Environmental Analysis – below, this Addendum concludes that construction of the California portion of DPV2 to provide transmission access for future potential renewable resources creates no new or more severe impacts; and that the impact levels presented in the Final EIR/EIS remain unchanged.

## 2. Potential Future Solar Projects in the Blythe Area or the East Riverside CREZ

SCE filed its PFM to allow SCE to commence construction of the California portion of DPV2 to position itself to take advantage of potential future generation resources (most of which are renewable) near Blythe, California, in eastern Riverside County. Renewable development near Blythe or in the East Riverside CREZ is currently speculative, but is likely to occur in the near future.

As of August 2008, SCE had not entered into a Power Purchase Agreement (PPA) with any generation projects that have requested interconnection in the Blythe area, including interconnection to DPV2 (SCE, 2008b). In addition, SCE was not aware of PPAs by any other utilities to purchase renewable generation from projects in the area. However, under its 2008 Renewables Portfolio Standard Solicitation, SCE has received proposals, shortlisted, and commenced PPA negotiations for several projects requesting interconnection in the Blythe area (SCE, 2008b).

**CAISO Queue.** In August of 2008 SCE represented that there were approximately 30 projects totaling 10,646 MW seeking interconnection at or near Blythe (August 2008 Response to CPUC Data Request #12). In January 2009, SCE stated in its Response to CPUC Data Request #13 that of the 30 projects that were included in its original estimate, 17 projects had been withdrawn (SCE, 2009). Accordingly, the total capacity requesting CAISO interconnection in the Blythe area has been reduced from 10,646 MW to 5,860 MW (4,650 MW of renewable generation) (SCE, 2009, CAISO, 2009). As of April 2009, no additional projects have been added or withdrawn from the queue (CAISO, 2009). This change in pending interconnection requests is the result of recently implemented CAISO queue reform to eliminate more speculative projects.<sup>1</sup> The fact that nearly 5,000 MW of facilities have survived the queue reform reflects that the Blythe area remains attractive to renewable developers.

**Bureau of Land Management (BLM) Solar Applications.** Although PPAs have not been finalized, a significant number of renewable developers have applied to BLM for permits in the Blythe and East Riverside CREZ areas. Table 2-1 below shows the number of applications that the BLM Palm Springs Field Office has received in the eastern Riverside County area near Blythe and Desert Center within the California Desert Conservation Area, as of April 2009. According to BLM's Renewable Energy Applications, up to approximately 127,561 acres of BLM-managed land have applications for use for solar facilities, primarily photovoltaic and solar trough technologies (BLM, 2009). Associated telecommunications facilities, operations/maintenance buildings, and transmission lines would also need to be built to support the operation of the solar facilities. Figure 2-1 shows the general locations of the solar projects on BLM land in the Blythe area.

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<sup>1</sup> The CAISO Transition Cluster is the first queue cluster window under the CAISO's Generator Interconnection Process Reform (GIPR) which now requires applicants to provide a \$250,000 study deposit and an additional \$250,000 deposit if the applicant cannot provide evidence of site control; a considerable increase from the pre-GIPR deposit requirements and a substantial commitment for a project that is not yet adequately defined and financed. Many of these withdrawn projects may, indeed, be viable projects and may re-apply for interconnection during the CAISO's next available queue cluster window (SCE, 2009).

**Table 2-1. BLM Solar Energy Project Applications in Eastern Riverside County –April 2009**

<b>Applicant</b>	<b>Type</b>	<b>MW</b>	<b>Location</b>	<b>Status</b>
OptiSolar, Inc.	Photovoltaic	350 MW	7,040 acres near Desert Center Area	Application received 11/13/07, Project Description submitted and ROW Processing cost received (5101 funds)
Florida Power & Light	Parabolic trough	250 MW	7,773 acres near Blythe	Application received 01/31/07, Project Description submitted, ROW Processing cost received (5101 funds), ROW in process for monitoring
Chuckwalla Solar, LLC	Photovoltaic	200 MW	4,098 acres near Desert Center Area I	Application received 09/14/06, ROW Processing cost received (5101 funds)
Chevron Energy Solutions Co. #2	Parabolic trough	100 MW	3,119 acres in Eastern Riverside County	Application received 02/15/07, Project Description submitted and ROW Processing cost received (5101 funds) (Overlaps with Solar Millennium, LLC)
Chevron Energy Solutions Co. #1	Parabolic trough	100 MW	3,119 acres near Blythe	Application received 02/15/07, Project Description submitted and ROW Processing cost received (5101 funds)
Florida Power & Light	Parabolic trough	250 MW	4,491 acres near Blythe	Application received 01/31/07, awaiting Project Description and ROW Processing funds
Bullfrog Green Energy	Photovoltaic	2,500 MW	6,629 acres near Blythe	Application received 06/13/07, Project Description submitted and ROW Processing cost received (5101 funds)
OTB Power Holdings	Photovoltaic	1,000 MW	8,742 acres near Blythe	Application received 06/13/07, awaiting Project Description and ROW Processing cost
OptiSolar, Inc.	Photovoltaic	600 MW	3,840 acres near Blythe	Application received 09/28/07, Project Description submitted and ROW Processing cost
Solar Millennium	Parabolic trough	500 MW	2,753 acres near Blythe	Application received 10/22/07, awaiting Project Description and ROW Processing funds (Overlaps with Chevron Energy Solutions Co. #2)
EnXco Development	Parabolic trough	300 MW	2,070 acres near Blythe	Application received 11/13/07, Project Description submitted, Proffer Established
EnXco Development	Parabolic trough	300 MW	11,603 acres near Blythe	Application received 11/13/07, Project Description submitted, Proffer Established
EnXco Development	Parabolic trough	300 MW	12,879 acres near Blythe	Application received 11/13/07, Project Description submitted, Proffer Established
EnXco Development	Parabolic trough	300 MW	1,071 acres near Blythe	Application received 11/13/07, Project Description submitted, Proffer Established
EnXco Development	Parabolic trough	300 MW	1,216 acres near Blythe	Application received 11/13/07, Project Description submitted, Proffer Established
Solel, Inc.	Parabolic trough	500 MW	8,775 acres near Desert Center N. on Hwy 177	Application received 11/7/07, Project Description submitted and ROW Processing cost received (5101 funds)
Solel, Inc.	Parabolic trough	500 MW	7,511 acres near Desert Center N. on Hwy 177	Application received 11/7/04, Project Description submitted and ROW Processing cost received (5101 funds)
Bull Frog Green Energy	Photovoltaic	2,500 MW	22,912 acres near Blythe	Application received 01/4/08, Project Description submitted, ROW Processing cost received
Lightsource Renewables	Parabolic trough	550 MW	7,920 acres near Blythe	Application received 08/8/08, Cost recovery agreement and MOU sent 11/14/08
<b>TOTAL</b>		<b>~11,400 MW</b>	<b>~127,561 acres</b>	

Sources: BLM, 2008; BLM, 2009.

# BLM Data on Solar Projects in the Blythe Area

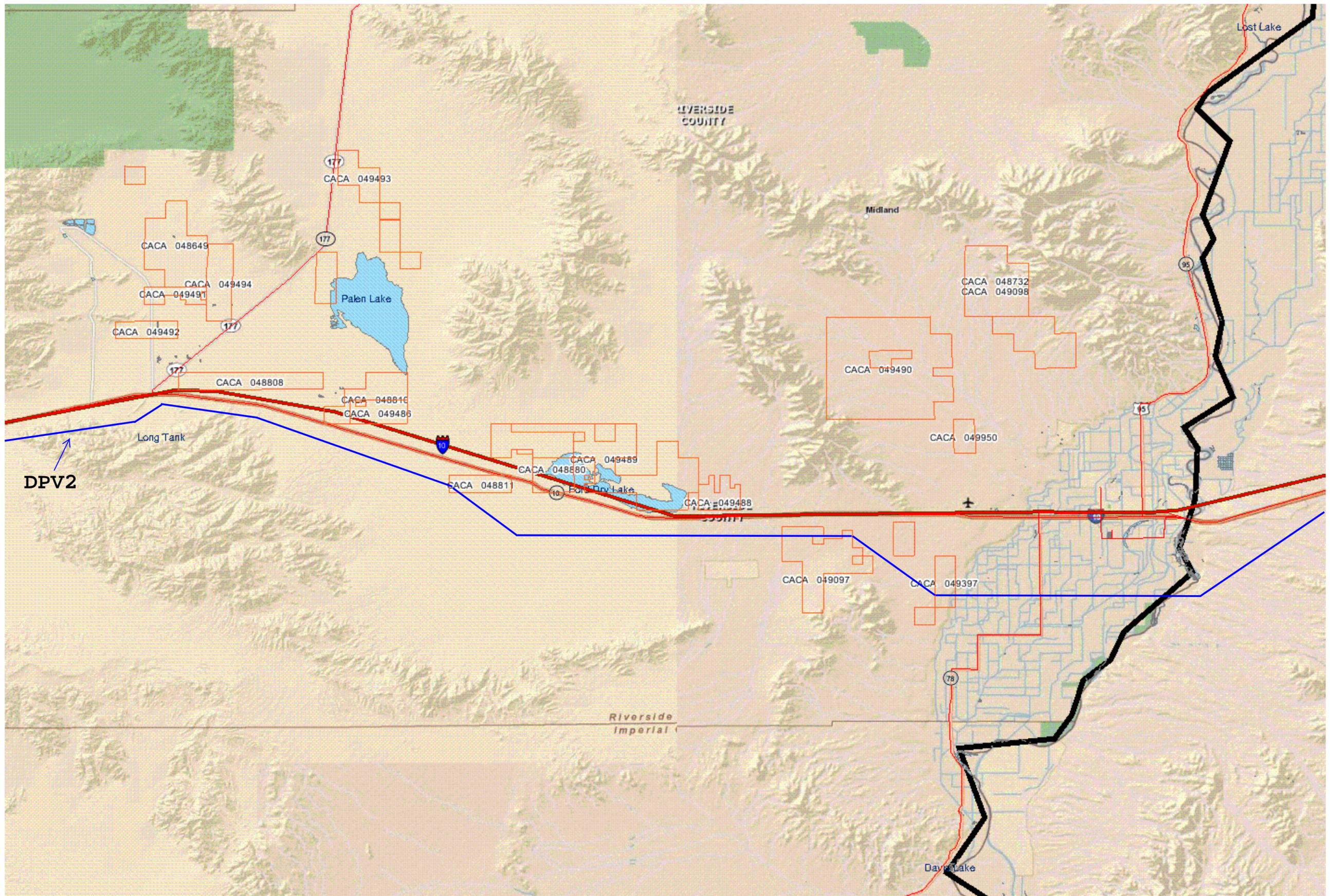


Figure 2-1

Source: SCE, 2008b

4-a

8/27/2008

No warranty is made by the BLM for the use of the data for purposes not intended by the BLM.



In addition to BLM applications, some of the proposed Blythe area renewable projects in the CAISO queue are proposed to be built on private land, not on BLM land. Thus, there are additional potential renewable projects in the Blythe area that are not listed in BLM data in Table 2-1.

**Renewable Energy Transmission Initiative (RETI).** RETI is a collaboration of state agencies, including the CPUC, the CAISO, and the California Energy Commission, and publicly and privately owned utilities, renewable developers, environmental organizations, federal land use management agencies, and other interested parties. RETI’s first work product has been the identification and ranking of “Competitive Renewable Energy Zones” (CREZ) to guide state-wide transmission planning to the most promising renewable resource areas. RETI has identified a CREZ labeled “East Riverside” (including the Blythe area) with significant solar potential. The Final RETI Phase 1B Report cites a total of 7,800 MW of solar energy in the Riverside East CREZ (1,000 MW for the Riverside East-A CREZ and 6,800 MW for the Riverside East-B CREZ) (RETI, 2009). The economic and environmental CREZ ranking process attempted to minimize costs and minimize environmental concerns, respectively. The assessments were based on different metrics and were therefore not combined into one set of results. However, the combined results are shown in the RETI Phase 1B Report in order to assist the Stakeholder Steering Committee with the task of recommending new major transmission facilities needed to access renewable energy. RETI states that the majority of the top ranked CREZs are located in two clusters, one north of Los Angeles and one further south. RETI further states that “This strong economic preference for development in this part of the state makes assuring that appropriate transmission is built between these areas and load centers important to meeting renewable generation goals at the lowest costs” (RETI, 2009).

The Riverside East-A CREZ is shown as one of the economically top-ranked CREZs. However, with full allocation of transmission costs, the Riverside East-A CREZ drops from the list of top CREZs. Section 5.8.7 of the Final Phase 1B Report explains this change in ranking as follows (RETI, 2009):

“In the base case several transmission lines that have been approved, but are not yet operational, were assumed to be built. The cost of these transmission lines is assumed to be ‘sunk’, and the most economic projects that can access them are not assigned a transmission capital cost for that portion of their route to load. (See Section 3 [of the Final Phase 1B Report] for a full description of the approach). To evaluate the impact that this assumption has on the analysis, the assignment of ‘free’ transmission from these projects was eliminated, and they were assigned transmission costs using the normal methodology.

“With the exception of the Riverside East-A CREZ dropping from the list of top CREZs, changes are relatively minor. Riverside East-A CREZ had been allocated 1,200 MW of ‘free’ transmission due to the proposed Palo Verde-Devers 2 line. Once this CREZ had to pay for the transmission upgrade, its weighted average rank cost rose from \$3/MWh to \$17/MWh.”

**American Recovery and Reinvestment Act.** The American Recovery and Reinvestment Act signed on February 17, 2009 includes \$7.9 billion designated for renewable energy including \$6 billion in loan guarantees for renewable energy power generation and transmission, \$1.6 billion in Clean Renewable Energy Bonds to finance renewable energy generation facilities, and grants of up to 30 percent of the cost of building a new renewable energy facility. While the exact effect the Recovery and Reinvestment Act will have on the renewable energy industry is unknown, the bill will likely increase the development and deployment of many forms of renewable energy, including utility-scale solar deployment.

While Table 2-1, the CAISO queue, and the RETI resource assessment all show a large number of renewable projects and future solar potential in the Blythe area, it is unlikely that all of these projects will be constructed. Factors that could delay or impede projects include potential financing issues and

environmental and feasibility challenges associated with NEPA and CEQA permitting. Many projects that have recently been withdrawn from the CAISO’s queue are as a result of the applicant’s election not to proceed and participate in the CAISO Transition Cluster study<sup>2</sup> (SCE, 2009). In addition, many of the proposed technologies have not yet been implemented on a large scale. The large-scale nature of the projects discussed above and the acreage of land required may result in even greater permitting and/or technical feasibility challenges or difficulty obtaining financing.

Thus, the potential generation sources are largely speculative and would not be considered part of the “whole of the action” or “connected actions” to DPV2 under CEQA or NEPA. The potential solar projects are evaluated in Section 3 of this Addendum to the DPV2 Final EIR/EIS for the benefit of decision-makers and the public; however, approval of the DPV2 project would not result in automatic approval of any of the renewable projects listed in Table 2-1, and the renewable projects would require individual permit applications to the CEC and BLM and compliance with CEQA and NEPA, followed by approvals from the CEC and BLM prior to construction on BLM lands.

SCE’s Master Plan for interconnecting the renewable generation projects to Midpoint Substation in the East Riverside/Blythe/Desert Center areas will be completed through the Transition Cluster Studies being performed at the CAISO. These Transition Cluster Studies will determine additional interconnection facilities required to integrate the renewable projects in the East Riverside/Blythe/Desert Center areas (SCE, 2009).

### 3. Environmental Analysis

Section 2 of this Addendum presents a large number of proposed renewable projects in the East Riverside CREZ and Blythe areas of the California Desert Conservation Area. As of December 2008, the renewable energy applications submitted to the BLM and in the CAISO queue that are located in eastern Riverside County and the Blythe area are primarily solar photovoltaic and solar trough technologies. Associated telecommunications facilities, operations/maintenance buildings, and transmission lines would also need to be built to support the operation of these solar facilities.

As discussed in Section 2, above, is unlikely that all of these projects will be constructed due to potential permitting, financing, and/or feasibility issues. Overall, these potential generation sources are largely speculative, and thus they are not considered to be “connected actions” or part of the “whole of the action” of DPV2 under NEPA or CEQA. The projects and types of associated impacts are identified under each environmental discipline in this section of the Addendum to the EIR for the benefit of decision-makers and the public. Types of mitigation measures that would generally apply to these types of impacts are also listed in this section. However, the petition to modify the DPV2 project approval would not result in automatic approval of any of the renewable projects or mitigation discussed herein. These projects would require permit applications to the CEC and BLM and compliance with CEQA and NEPA permitting, followed by approvals from the CEC and BLM prior to construction on BLM lands. The full text of the types of recommended mitigation measures is included in Appendix A of this Addendum.

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<sup>2</sup> The CAISO Transition Cluster is the first queue cluster window under the CAISO’s Generator Interconnection Process Reform (GIPR) which now requires applicants to provide a \$250,000 study deposit and an additional \$250,000 deposit if the applicant cannot provide evidence of site control; a considerable increase from the pre-GIPR deposit requirements and a substantial commitment for a project that is not yet adequately defined and financed. Many of these withdrawn projects may, indeed, be viable projects and may re-apply for interconnection during the CAISO’s next available queue cluster window (SCE, 2009).

## 3.1 Biological Resources

### Methodology

A literature review was conducted to determine the federal and State listed endangered, threatened, proposed endangered or threatened, rare, and special-status plant and wildlife species that have potential to occur within the vicinity of the solar facilities. The literature review included a search of the California Natural Diversity Database (CNDDDB, 2008) for the 51 USGS 7.5' topographic quadrangles that the proposed DPV2 Project would traverse. These quadrangles include: Big Maria Mountains Southwest, Corn Spring, Inca, Desert Center, East of Aztec Mines, East of Victory Pass, Ford Dry Lake, Hopkins Well, McCoy Peak, McCoy Spring, McCoy Wash, Palen Lake, Ripley, Roosevelt Mine, Sidewinder Well, Victory Pass, West of Palen Pass. The CNDDDB lists actual occurrences of sensitive species, and it was therefore assumed that there is a high likelihood of presence of the CNDDDB-listed species on the solar renewable project sites for the quadrangles named above. An exception was made for fish species due to a lack of year-round water on the solar renewable project sites, and it was assumed that fish species listed on the CNDDDB for the named quadrangles would be unlikely to occur.

### Environmental Setting

The renewable generation projects would be located within the Colorado Desert, which is the western extension (and subdivision) of the Sonoran Desert that covers southern Arizona and northwestern Mexico. The Colorado Desert is a desert of much lower elevation than the Mojave Desert to the north, and much of the land lies below 1,000 feet in elevation. Common habitat communities within the Colorado Desert include sandy desert, scrub, palm oasis, and desert wash. Summers are hot and dry, and winters are typically cool and somewhat moister.

#### *Vegetation Overview*

The solar renewable generation projects would occur within the Lower Colorado River Valley (Colorado Desert) subdivision of the Sonoran Desert. The western lowland basins are dominated by creosote bush, white bursage, and saltbushes (*Atriplex* spp.) (Brown, 1982) (see Figure D.2-2 of the DPV2 FEIR/EIS). The climate is very arid, with as little as five inches of precipitation per year. The Colorado Desert generally is composed of broad alluvial valley floors and is usually dominated by creosote bush (*Larrea tridentata*), in association with white bursage on rocky mountain slopes, bajadas or intergraded slopes, as well as in the alluvial valleys. These are also typically vegetated with populations of native grass such as big galleta (*Pleuraphis rigida*) which occur on the finer textured soils. Numerous dry washes occur within the valley bottoms that may support populations of desert trees and shrubs including blue palo verde (*Parkinsonia florida*), ironwood (*Olneya tesota*), honey mesquite (*Prosopis glandulosa*), white bursage, smoketree (*Cotinus coggygria*), and sweet bush (*Bebbia juncea*), as well as other upland plants typical of the surrounding habitats.

**Desert Scrub and Desert Dunes.** The desert scrub communities can be classified as creosote bush scrub, brittlebush scrub, salt bush scrub, or catclaw scrub depending on which of the following plants is dominant, creosote bush, brittlebush (*Encelia farinosa*), saltbush, or catclaw acacia, respectively. Each community typically exhibits all four species, three of which occur as lesser components. The desert scrub communities are characterized by widely spaced shrubs, typically between 1 to 10 feet tall, on well-drained secondary soils of slopes, fans, and valleys. The most common of the desert scrub communities found along the proposed route is creosote bush scrub. Other components within these plant communities include ocotillo, desert croton (*Croton californicus*), indigo bush (*Psoralea schottii*), white bursage, and big galleta grass. Several flowering annuals are expected to occur throughout the desert scrub during years of good

rainfall. Species expected to occur during years with good rainfall and resultant desert blooms include members of the families Poaceae, Polygonaceae, Papaveraceae, Crassulaceae, Fabaceae, Onagraceae, Polemoniaceae, Hydrophyllaceae, Boraginaceae, and Asteraceae.

The physical formation of the desert dune communities can be attributed to two basic origins: aeolian (wind-blown) or alluvial (deposited by flowing water). The majority of the desert dunes in the renewable project region are of aeolian origin, and are populated with a sparse distribution of shrub and scrub species, including creosote bush, saltbush, and mesquite. Desert dune areas in the region are primarily considered stabilized or partially stabilized desert dunes. The sand accumulates and becomes somewhat anchored by both native and non-native plants (shrubs, annuals, and grasses).

**Ephemeral Drainages and Desert Washes.** Scattered within the proposed route are numerous washes and perennial streams, each with characteristic riparian vegetation, the extent of which depends on the hydrology. Many of the washes are dry almost the entire year and generally support upland vegetation that is consistent with the surrounding habitat. More commonly, washes that support many of the same species that are found on nearby uplands exhibit a greater plant density and stature that tends to be noticeably taller. Other washes are comprised of looser, sandy alluvial soils that do not allow for permanent plant growth and exhibit little to no vegetation.

More established ephemeral drainages support plant species that differ from adjacent uplands and typically include scalebroom (*Lepidospartum squamatum*), willows (principally *S. exigua*), and mule fat (*Baccharis salicifolia*). Most of these plants are structurally taller and woodier than the adjacent upland scrub habitat and may occur as isolated individuals or as sparse stands within drainages.

The desert washes, most of which are relatively small, are characterized by a pattern of braided washes made up of channels where waters tend to focus, join, and flow to termini at playas, sand dunes, or the Colorado River. These washes are typically populated with ironwood, blue palo verde, mesquite, and smoketree. The vegetation types associated with these washes provide unique habitats which are based on periodic flooding and substrate alterations, and a high water table. Because of periodic higher water availability, higher water table, and the accumulation of fine sediments, this is a community of relatively high productivity, and with high local and regional biological values.

**Desert Scrub Habitats and Desert Dunes.** Creosote bush scrub is the dominant plant community in the region of the solar renewable projects. This habitat community has relatively limited plant species diversity and is structurally monotypic. These characteristics limit the wildlife species within the community to those that are adapted to harsh, arid environments.

Typical desert reptile species expected to occur within desert portions of the project area include common collared lizard (*Crotaphytus collaris*), desert spiny lizard (*Sceloporus magister*), common chuckwalla, side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), red coachwhip snake (*Masticophis flagellum*), sidewinder (*C. cerastes*), red diamondback (*C. ruber*), speckled rattlesnake (*C. mitchelli*), and desert tortoise (*G. agassizii*).

Common bird species expected to occur in the areas include: white-winged doves (*Z. asiatica*), greater roadrunner (*Geococcyx californianus*), loggerhead shrike, black-throated sparrow, northern flicker (*C. auratus*), verdin (*Auriparus flaviceps*), Gila woodpecker, Gambel's quail (*C. gambelii*), red-tailed hawk, common raven (*Corvus corax*), and prairie falcon (*F. mexicanus*).

Common mammal species likely to occur in desert scrub habitat include coyote (*C. latrans*), bobcat (*Lynx rufus*), American badger (*Taxidea taxus*), black-tailed jackrabbit, desert kangaroo rat (*D. deserti*), and desert pocket mouse (*C. penicillatus*).

## Special Habitat Management Areas Overview

The solar renewable projects would be located in the vicinity of federal, State, and local designated Special Habitat Management Areas.

- California Desert Conservation Area (CDCA)
- BLM Wilderness areas (designated by California Desert Protection Act, See Section 3.4, Wilderness and Recreation)
- Areas of Critical Environmental Concern
- Riverside County Natural Areas/Reserves
- Other Federal Lands
- Multiple Species Habitat Conservation Plan areas
- Designated Critical Habitat

The solar facilities are within the CDCA and NECO Planning Area. Management areas identified in these plans and other areas designated as Reserves, Natural Areas, Conservation Areas, or Critical Habitat located within the vicinity are described below.

**California Desert Conservation Area.** The California Desert Conservation Area (CDCA) is a 25-million-acre expanse of land in southern California designated by Congress in 1976 through the Federal Land Policy and Management Act (FLPMA). The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of southern California, and the need for a comprehensive plan for managing the area. Congress stated that the California Desert Conservation Area Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The renewable projects region falls within the CDCA.

The Wildlife Element of the CDCA contains objectives and goals designed to: manage federally and State listed species and their habitats; comply with existing legislation and BLM policies; provide certain species designated as sensitive by the BLM special consideration and attention in the planning process; consider the habitat of all fish and wildlife in implementing the Plan; manage representative habitats using a holistic approach; give habitats unique to the CDCA special management consideration and manage them so as to maintain their unique biological characteristics; and manage sensitive habitat using a holistic, systems-type approach. Some examples of sensitive habitats include: riparian areas, wetlands, sand dunes, relict and island habitats, washes, and important ecological zones between different major ecosystems and deserts.

The primary active wildlife management tools used in the Plan are Areas of Critical Environmental Concern (ACEC)<sup>3</sup> and Habitat Management Plans (HMP). The Plan also affords protection to fish and wildlife resources through the designation of Multiple-Use Class L, which limits the number and location of routes that are approved. In addition, the Plan also includes a designation of Special Areas (SA) that highlights habitats and species that should receive special consideration in the environmental assessment process for all project types. Two additional designations in the Wildlife Element are Research Natural Area (RNA) and Sikes Act Agreement. RNAs have been proposed in a few locations where research and education would be the primary uses. Sikes Act Agreements are cooperative agreements between the BLM and the California Department of Fish and Game (CDFG) for joint development and implementation of an HMP. The Plan identified 89 special fish and wildlife areas that would receive active habitat

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<sup>3</sup> The term “areas of critical environmental concern” refers to areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards (FLPMA Section 103 (a), 1976).

management and/or special attention in the environmental assessment process. Twenty-eight areas were identified as ACECs solely or partially to protect fish and wildlife resources.

**California Desert Protection Act.** On October 31, 1994, Congress enacted the California Desert Protection Act (CDPA) (Public Law 103 433), thereby designating certain lands in the California desert as wilderness in furtherance of the purpose of the Wilderness Act and Sections 601 and 603 of FLPMA. Of the 69 areas designated as BLM wilderness through the CDPA, four occur in the vicinity of the renewable project region. These include Chuckwalla Mountains, Little Chuckwalla Mountains, Palen/McCoy, and Big Maria Mountains. Within the wilderness areas, management activities are allowed, as well as the continued grazing of livestock in those areas where it was established prior to the date of enactment of the CDPA.

### ***Areas of Critical Environmental Concern***

The renewable generation projects would cross the Chuckwalla Valley Dune Thicket ACEC and Chuckwalla DWMA ACEC (see Figure D.5-2 of the DPV2 Final EIR/EIS).

- **Chuckwalla Valley Dune Thicket ACEC.** The Chuckwalla Valley Dune Thicket ACEC is located in the Chuckwalla Valley, at the confluence of a wash and a small dune system just west of Wiley's Well Road. The ACEC is located west and south of solar facility applications. The area supports a series of small pockets, 0.25 to 0.6 acres in extent, of desert wash woodland. Palo verde is the dominant species with desert ironwood scattered throughout. Prominent elements of the understory are *Brandegea bigelovii* and *Sarcostemma cynanchoides* ssp. *hartwegii*. The areas adjacent to the woodlands are occupied by creosote bush, some of which exceed 10 feet in height. The Mojave fringe-toed lizard (*Lima scoparia*) is also found in this ACEC, which is near the southern extent of its range.
- **Chuckwalla DWMA ACEC.** The Chuckwalla DWMA ACEC encompasses the Chuckwalla Mountains and portions of the Chuckwalla Valley and Orocopia Mountains. This DWMA encompasses the areas located south of I-10 from Wiley's Well Road and the Chuckwalla Valley Dune Thicket ACEC to near the Cactus City Rest Area. In addition, a portion of the DWMA in this segment lies north of I-10 from just west of the community of Desert Center to near the Cactus City Rest Area. Several solar facilities have applied for BLM lands just north of the Chuckwalla DWMA ACEC on the northern side of I-10. This DWMA ACEC was designated to protect desert tortoise, and significant natural resources including special status plant and animal species and natural communities. This vast area contains a variety of desert habitats that are still relatively undisturbed in most places. The dominant plant community in the area is creosote bush scrub, with creosote bush, burro weed, ocotillo, and brittle bush, as the most conspicuous species. In the alluvial washes the typical wash woodland includes mesquite, desert ironwood, smoke tree, palo verde, and desert willow (*Chilopsis linearis*). There are stands of the California fan palm (*Washingtonia filifera*) in several of the oases. At least two rare plants, a cactus, *Escobaria vivipara* var. *alversonii*, and *Ditaxis californica*, occur in the Chuckwalla DWMA. Within the area, there is a wide variety of lower-Sonoran animal life. Over 20 species of reptiles likely occur in the area. The desert bighorn (*Ovis canadensis*) is found in the mountains.

### ***Chocolate/Mule Mountains Herd Management Area***

The Chocolate/Mule Mountains Herd Management Area (HMA) is located to the south-southwest and west of the City of Blythe, and generally encompasses the portions of the Mule Mountains and Little Chuckwalla Mountains that lie south of the easternmost solar facilities.

### ***McCoy Wash HMP***

McCoy Wash is located in the McCoy Mountains, which are north of I-10 and northwest of the City of Blythe. This area was identified as an HMP in the CDCA Plan. Three solar facilities have applied for land within the McCoy Wash HMP.

### ***Orocofia Mountains and Chuckwalla Mountains Native Ungulate HMPs***

The Orocofia and Chuckwalla Mountains Native Ungulate HMPs, which were identified in the CDCA Plan, cover the portions of the Chuckwalla Mountains and Orocofia Mountains between the Little Chuckwalla Mountains to near the Cactus City Rest Area. A majority of these areas were incorporated into the Chuckwalla DWMA as part of the NECO Plan, and are managed for bighorn sheep.

### ***Desert Tortoise Critical Habitat***

Designated Critical Habitat for the desert tortoise extends from just east of Wiley's Well Road to just east of the Cactus City Rest Area. Many of the solar facilities would be located within Critical Habitat from just east of Wiley's Well Road to the Desert Center region.

### ***Riverside County Natural Areas/Reserves***

- **McCoy Wash.** McCoy Wash, northwest of the City of Blythe, drains portions of the Big and Little Maria and McCoy Mountains and supports extensive ironwood woodlands containing ironwood, palo verde, smoke tree, desert willow, and mesquite. The lush woodland grades into a creosote bush scrub in the higher sections. Creosote and burro-weed, *Ambrosia dumosa*, are the main elements of the scrub. The woodland is an important refuge for migrating birds and it also provides nesting grounds for a number of breeding birds. It also supports a diverse population of mammals. With the exception of a few rocky outcrops, most of the area is composed of dissected alluvial fans or riverwash.

**Other Federal Lands.** The renewable project region is in the vicinity of Joshua Tree National Park.

- **Joshua Tree National Park.** On the border between the Mojave and Colorado Deserts, Joshua Tree National Park (JTNP) supports a rich and diverse flora and fauna. Plant communities range from low desert wash to a pinyon-juniper forest, with single-leaved pinyon pine (*Pinus monophylla*), California juniper (*Juniperus californica*), and some scrub oak (*Q. turbinella*). The major communities are the Joshua tree woodland and the creosote bush scrub. The Joshua trees (*Yucca brevifolia*) form dense and extensive groves. Several palm oases occur in the JTNP. The desert bighorn sheep and desert tortoise are two of the species that occur in the JTNP, and that are actively managed for conservation purposes. The JTNP encompasses all or part of a number of mountain ranges, including the Little San Bernardino, Pinto, Eagle, Hexie, Cottonwood, and Coxcomb. All but the latter two are considered a part of the Transverse Range Province. Management of JTNP is defined by the General Management Plan (GMP). In 1999, the GMP was amended by the Back Country and Wilderness Management Plan, whose goal was update the GMP with the provisions of the California Desert Protection Act. The purpose of the GMP is to define the overall preservation and use management strategy for resources within the Park. This is approached through management zoning on all lands. Management zoning determines how specific lands in the JTNP are to be managed to protect resources, including species and habitats, and still provide for visitor enjoyment. Four zone classifications are used in the GMP, including Natural, Historic, Development, and Special Use. Within each zone, subzones may be designated to allow for particular management needs and some implementation plans have been developed for specific resources.

**Northern and Eastern Colorado Desert Coordinated Management Plan.** The Northern and Eastern Colorado (NECO) Desert Coordinated Management Plan is a landscape-scale, multi-agency planning

effort that seeks to protect and conserve natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The planning area, which is located in the south-eastern CDCA, encompasses over 5 million acres and hosts 60 sensitive plant and animal species. BLM's CDCA Plan is being amended through six concurrent plan amendments, one of them being the NECO Plan. This multiple use planning effort also takes into account other uses of the desert, such as hiking, hunting, rock hounding, off-highway recreation, commercial mining, livestock grazing, and utility transmission. The NECO Plan provides reserve management for the desert tortoise, integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards and guidelines for public land health for BLM lands. The Plan focuses on the conservation of species and habitats through the use of a system of large (50 percent larger than recommended in the desert tortoise recovery plan) DWMA's for the desert tortoise and wildlife habitat management areas (WHMA's) for other special status species and natural communities. DWMA's and WHMA's would replace all current special designations for species and habitats. DWMA's generally coincide with, but are smaller than, current tortoise critical habitat areas, and would be managed as ACECs and feature a 1 percent surface disturbance limit. The focus of WHMA's is on mitigation, habitat improvements, and federal ownership. The NECO Plan also addresses designation of routes of travel, land ownership pattern, access to resources for Economic/Social needs, bighorn sheep management, and burro and wild horse management.

### **Designated Critical Habitat.**

**Desert Tortoise.** In 1994, the U.S. Fish and Wildlife Service designated 6.4 million acres of Critical Habitat for the tortoise in California, Nevada, Utah, and Arizona. The proposed DPV2 ROW traverses through the Eastern Colorado Recovery Unit that was identified in the Desert Tortoise Recovery Plan. The Eastern Colorado Recovery Unit includes the Chuckwalla and Joshua Tree DWMA's. The NECO Plan designated DWMA's where desert tortoise recovery efforts are focused.

### **Plant Communities and Sensitive Habitats**

Plant communities within the region of the renewable energy facilities primarily consist of creosote bush scrub habitat and dry desert washes dominated by the Sonoran desert scrub community. The spacing of the desert scrub is sparse, but the density of shrubs increases near the base of the hills and mountains. The composition of the vegetation community also varies in this region, with some areas increasing in plant density and/or diversity, especially westward toward Desert Center. White bursage becomes more common in upper bajadas, whereas scattered desert dunes occur nearer to the City of Blythe. This region is also marked by numerous desert washes that support desert scrub plant species and larger shrubs, such as honey mesquite, blue palo verde, and ironwood.

The Chuckwalla Mountains, located south of some of the renewable projects, support scattered occurrences of Desert Fan Palm Oasis Woodland, a sensitive plant community.

### **Special Status Plant and Wildlife Species**

#### ***Plant Species***

Eighteen sensitive plant species have a high potential to occur on the sites of the solar renewable projects and associated transmission ROWs, including:

- Abrams' spurge
- bitter hymenoxys
- Coves' cassia
- desert spike-moss
- dwarf germander
- Emory's crucifixion-thorn
- Las Animas colubrina
- pink fairy-duster
- spearleaf
- California ditaxis

- glandular ditaxis
- Harwood's milk-vetch
- jackass-clover
- California ayenia
- foxtail cactus
- chaparral sand-verbena
- Coachella Valley milk-vetch
- Orocopia sage

Chaparral sand-verbena, Coachella Valley milk-vetch, and Orocopia sage are CNPS List 1B species. The Coachella Valley milk-vetch is also a federally listed endangered species. The remaining sensitive plant species are designated by the CNPS as either List 2, 3, or 4 species.

### ***Wildlife Species***

**Fishes and Amphibians.** Sensitive fishes would not be expected to occur on the sites of the solar renewable projects and associated transmission ROWs due to limited availability of water resources. Sensitive amphibians have a low potential to occur.

**Reptiles.** The desert tortoise, a State and federally listed reptile species, has a high potential to occur on the sites of the solar renewable projects and associated transmission ROWs.

**Birds.** Four bird species of State concern including the burrowing owl, Crissal thrasher, Le Conte's thrasher, and vermilion flycatcher are known to occur in the project area and have a high likelihood of being present at the sites of the solar renewable projects and associated transmission ROWs. Two additional sensitive avian species, the black-tailed gnatcatcher and prairie falcon, are also known to occur.

### **Mammals.**

- American badger
- Arizona Myotis
- California leaf-nosed bat
- cave myotis
- Colorado Valley woodrat
- hoary bat
- Nelson's bighorn sheep
- pallid bat
- western mastiff bat

Six California mammals of special concern including American badger, Arizona myotis, California leaf-nosed bat, cave myotis, pallid bat, and western mastiff bat and three sensitive mammal species including Colorado Valley woodrat, hoary bat, and Nelson's bighorn sheep are known to occur in the project region, and have a high probability of occurrence on the solar renewable project sites and associated transmission line ROWs. The pallid bat and western mastiff bat are also BLM sensitive species.

## **Environmental Impacts and Mitigation Measures**

Up to approximately 127,500 acres of BLM land may be developed including grading and contouring, installation of solar dishes and fencing, creation of access roads, and construction of transmission lines and support structures. The types of Impacts that would be likely to occur are described below along with the likely mitigation measures that would be implemented for these types of impacts. However approval of the DPV2 project would not result in automatic approval of any of the renewable projects or mitigation discussed herein. These projects would require permit applications to the CEC and BLM and compliance with CEQA and NEPA permitting, followed by approvals from the CEC and BLM prior to construction. The text of recommended mitigation measures is presented in full in Appendix A.

***Impact B-1: Construction activities would result in temporary and permanent losses of native vegetation***

Construction of the solar energy projects and associated transmission lines would cause both temporary (during construction from vegetation clearing) and permanent (displacement of vegetation with project features) impacts to vegetation communities. Construction activities would also result in the alteration of soil and surface conditions, including the loss of native seed banks, changes in topography and drainage. In addition to the permanent impact footprints of the solar dishes, access roads, telecommunications facilities, and operations/maintenance buildings, the solar dishes would cast a shadow over many acres, changing the shade regime of the current habitat. In addition to the shading, an increase in water availability would occur during project operations, as solar facilities generally require periodic solar dish surface washing. These project elements would substantially change the microclimate of each site, which is anticipated to reduce or eliminate habitat suitability for many desert species. Therefore, all vegetation subject to a changed shade and water regime within the fencelines of the projects would be considered permanently impacted. Furthermore, a number of acres of permanent impacts would occur from the transmission tower footprints. The quantified impacts to specific vegetation communities would be determined once final engineering is complete and the limits of grading and any other ground-disturbance are defined.

**Vegetation Management (Loss of Trees).** These facilities would be located in a desert setting with sparse vegetation. No estimates have been made as to how many trees or shrubs would be removed or trimmed as part of vegetation management activities, but despite the desert habitat, it is possible that desert washes within the site support trees or that desert fan palm oasis woodlands are located at the project sites, and that these would have to be removed during construction. Removal or trimming of a native tree or shrub that contains an active bird nest would be a violation of the Migratory Bird Treaty Act. Additionally, trimming more than 30 percent of a native tree’s crown would diminish the tree’s value as wildlife habitat and could cause harm to the tree leading to its decline or death.

**Type Conversion.** The construction and operation of new transmission lines and the solar projects themselves could cause wildfires, and could reduce the effectiveness of fire fighting efforts. Fires cause direct loss of vegetation communities, wildlife habitat, and wildlife species. While fire risk is relatively low in the desert, fires do occur. Fire in the desert ecosystem also creates risk of type conversion, because desert habitat does not quickly recover from damage. Plants in the desert are not adapted to fire, and they sometimes take years or decades to re-establish in burned areas. Desert areas that are burned are more susceptible to invasion by non-native species, such as grasses or mustards that can form a continuous cover of fine fuels that dry out in early summer. This cover of fine fuels makes the area more likely to burn again in the near future. Areas dominated by these species also often have a prolonged fire season because the fuels dry quickly and earlier in the season. This change in vegetation community is called “type conversion” and provides minimal habitat value for native plant and animal species, especially those of special status. However, not all fires can be prevented.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts to vegetation.

***Mitigation Measures for Impact B-1: Construction activities would result in temporary and permanent losses of native vegetation***

- B-1a Provide restoration/compensation for affected sensitive vegetation communities.**
- B-1b Conduct biological monitoring.**
- B-1c Perform protocol surveys.**
- B-1d Train project personnel.**

- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.**
- B-1f Build access roads at right angles to streambeds and washes.**
- B-1g Comply with all applicable environmental laws and regulations.**
- B-1h Restrict the construction of access and spur roads.**
- B-1i Protect and restore vegetation.**
- B-2b Identify environmentally sensitive times and locations for tree trimming.**

***Impact B-2: Construction activities would result in adverse effects to jurisdictional waters and wetlands through vegetation removal, placement of fill, erosion, sedimentation, and degradation of water quality***

Direct and/or indirect impacts to jurisdictional waters (i.e., non-wetland areas regulated by the U.S. Army Corps of Engineers (ACOE), State and Regional Water Boards (RWQCB), and/or CDFG) could occur from construction of the solar facilities and transmission lines. Based on the vegetation communities present, jurisdictional wetlands are not anticipated to occur, but impacts to jurisdictional non-wetland waters could occur if drainages or washes are present. A formal jurisdictional delineation for the projects would be conducted once project-specific features are sited and final engineering is complete. Then, impacts to jurisdictional areas can be clearly defined, and the project proponents can apply for permits from the ACOE, RWQCB, and CDFG. Because formal delineations have not been conducted, the presence and extent of jurisdictional areas is unknown. Should impacts to jurisdictional waters occur, implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact B-2: Construction activities would result in adverse effects to jurisdictional waters and wetlands through vegetation removal, placement of fill, erosion, sedimentation, and degradation of water quality***

- B-1b Conduct biological monitoring.**
- B-1c Perform protocol surveys.**
- B-1d Train project personnel.**
- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.**
- B-1f Build access roads at right angles to streambeds and washes.**
- B-2a Provide restoration/compensation for affected jurisdictional areas.**
- B-2b Identify environmentally sensitive times and locations for tree trimming.**
- B-2c Avoid sensitive features.**

***Impact B-3: Construction and operation/maintenance activities would result in the introduction of invasive, non-native, or noxious plant species***

In addition to construction activities that could introduce invasive, non-native, or noxious plant (weed) species (e.g., seed brought in on the soles of shoes, or on the tires and undercarriages of vehicles), the assemblages of solar dishes will cast a shadow over a number of acres. This shading, plus an increase in water availability from washing activities would substantially change the microclimate of the sites, which is anticipated to reduce or eliminate habitat suitability for many desert species, and may increase habitat suitability for others including invasive, non-native, or noxious plant species that could spread to the surrounding desert area.

The inadvertent introduction of non-native plant species is a special concern for desert plant communities. Non-native plants pose a threat to the natural processes of plant community succession and fire frequency, and can affect the biological diversity and species composition of native plant communities. The survival of some populations of special status species could be adversely affected by the success of an introduced plant species. The introduction of non-native or noxious weeds would be related to the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed, and use of straw bales or wattles that contain seeds of non-native plant species. Implementation of mitigation measures commensurate with the following would reduce the severity of impacts from non-native plant introduction and spread.

***Mitigation Measures for Impact B-3: Construction and operation/maintenance activities would result in the introduction of invasive, non-native, or noxious plant species***

- B-1a Provide restoration/compensation for affected sensitive vegetation communities.**
- B-1b Conduct biological monitoring.**
- B-1i Protect and restore vegetation.**
- B-2a Provide restoration/compensation for affected jurisdictional areas.**
- B-3a Prepare and implement a Weed Control Plan.**

***Impact B-4: Construction activities would create dust that would result in degradation of vegetation***

Construction activities such as grading, tower footing excavation, and driving on unpaved roadways would result in increased levels of blowing dust that may settle on surrounding vegetation. Increased levels of dust on plants can significantly impact the plants' photosynthetic capabilities and degrade the overall vegetation community resulting in an adverse effect on riparian or other sensitive vegetation communities through the spread of fugitive dust. However, desert vegetation is typically subject to windblown sand and dust, and the additional levels of dust from construction or maintenance of the project would not be expected to substantially impact the photosynthetic capabilities of plants in the surrounding areas. Therefore, no mitigation is recommended.

***Impact B-5: Construction activities would result in direct or indirect loss of listed or sensitive plants or a direct loss of habitat for listed or sensitive plants***

Listed or sensitive (special status) plant species impacts could be caused by direct loss of known locations of individuals, or direct loss of potential habitat as a result of temporary or permanent grading or vegetation clearing during construction.

Eighteen sensitive plant species have a high potential to occur on the sites of the solar renewable projects and associated transmission ROWs. These include chaparral sand-verbena, Coachella Valley milk-vetch, and Orocopia sage, which are CNPS List 1B species. The Coachella Valley milk-vetch is also a federally listed endangered species. The remaining sensitive plant species are designated by the CNPS as either List 2, 3, or 4 species.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact B-5: Construction activities would result in direct or indirect loss of listed or sensitive plants or a direct loss of habitat for listed or sensitive plants***

- B-1a Provide restoration/compensation for affected sensitive vegetation communities.**
- B-1b Conduct biological monitoring.**

- B-1c Perform protocol surveys.**
- B-1d Train project personnel.**
- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.**
- B-1f Build access roads at right angles to streambeds and washes.**
- B-1g Comply with all applicable environmental laws and regulations.**
- B-1h Restrict the construction of access and spur roads.**
- B-2a Provide restoration/compensation for affected jurisdictional areas.**
- B-2c Avoid sensitive features.**
- B-5a Conduct rare plant surveys, and implement appropriate avoidance/minimization/compensation strategies.**
- B-5b Delineate sensitive plant populations.**
- B-5c No collection of plants or wildlife.**
- B-5d Salvage sensitive species for replanting or transplanting.**

***Impact B-6: Construction activities, including the use of access roads, would result in disturbance to wildlife and result in wildlife mortality***

Direct mortality of small mammals, reptiles, and other less mobile species could occur during construction of the solar facilities and associated transmission lines. This action would result primarily from the construction at the solar project sites and the clearing of tower footprints for the transmission interconnections. This section discusses impacts to wildlife in general, particularly non-special status species. Deaths related to construction would be incurred primarily by burrow-dwelling animals; eggs and nestlings of bird species with small, well-hidden nests (impacts to nesting birds is discussed in Impact B-8); and species with limited mobility (lizards, snakes, ground squirrels). More mobile species like birds and larger mammals are expected to disperse into adjacent habitat areas during land clearing and grading. Construction activities and human presence can also alter or disrupt the breeding and foraging behaviors of wildlife. Due to the large extent of disturbance, wildlife species found at the renewable project sites would not be expected to recolonize post construction; they would be expected to recolonize along the associated transmission lines, however. Except where wildlife habitats are known to support sensitive, rare, threatened, or endangered species or nesting birds, all of the impacts on general, non-special status wildlife from construction of the renewable projects would not be expected to be substantial, and no mitigation is recommended.

***Impact B-7: Construction activities would result in direct or indirect loss of listed or sensitive wildlife or a direct loss of habitat for listed or sensitive wildlife***

The project has the potential to impact the desert tortoise, a State and federally listed wildlife species. Construction activities would adversely affect the desert tortoise and may result in injury or mortality during surface disturbing activities. Other impacts may include nest and/or burrow destruction, alteration of their seasonal activities, and degradation of their habitat during the construction and maintenance activities associated with the transmission line. Use of construction vehicles and routine maintenance operations could result in injury or death to desert tortoises through vehicle collisions. This is especially true with juvenile desert tortoises that are difficult to see due to their small size and profile. In addition, desert tortoises seeking shade under parked vehicles or equipment could be crushed when vehicles and equipment are moved.

Construction activities also have the potential to degrade desert tortoise habitat by compacting the soil. This leads to the reduction of vegetation and promotes loss of soil and nutrients, reduces water absorption,

and increases the difficulties in digging burrows. Construction activities can also introduce or increase the spread of non-native plant species, further degrading tortoise habitat.

Newly constructed transmission line towers may also provide artificial perches and nest sites for ravens, which prey on young desert tortoises.

The project also has the potential to impact the following non-listed, sensitive wildlife species and their habitats:

- American badger
- Arizona Myotis
- California leaf-nosed bat
- cave myotis
- Colorado Valley woodrat
- Crissal thrasher
- vermilion flycatcher
- prairie falcon
- hoary bat
- Nelson's bighorn sheep
- pallid bat
- western mastiff bat
- burrowing owl
- Le Conte's thrasher
- black-tailed gnatcatcher

Five sensitive bird species — Crissal thrasher, Le Conte's thrasher, vermilion flycatcher, black-tailed gnatcatcher, and prairie falcon — are known to occur within the region of the solar projects. The solar projects could cause direct and indirect impacts on sensitive bird species through permanent and temporary loss of suitable habitat, potential bird strikes on high tension wires, and disturbance of nesting activities. It is unlikely that riparian habitat that may be utilized by nesting birds would be removed by the solar projects because riparian habitat is not suitable for solar projects. Therefore impacts to vermilion flycatcher are not expected.

The solar projects could result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the Wildlife Agencies. The loss of habitat could affect foraging opportunities for small rodents, bats, and the other mammals.

There is also the potential to impact roosting bat species. Construction activities may have an impact on sensitive bat species that have a high potential to occur in this area including pallid bat, western mastiff bat, California leaf-nosed bat, hoary bat, Arizona myotis, and the cave myotis. These species typically roost in trees, rock crevices, or caves that are common in the steeper, rockier areas surrounding the solar projects sites. Impacts to roosting bats could be avoided by identifying locations of possible roosting colonies and scheduling work activities to avoid work adjacent to these areas during the breeding season. While not all bats are migratory a number of species common to this area winter in warmer climates outside the project area. However, some species are year round residents and hibernate in the project region.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact B-7: Construction activities would result in direct or indirect loss of listed or sensitive wildlife or a direct loss of habitat for listed or sensitive wildlife***

- B-1a Provide restoration/compensation for affected sensitive vegetation communities.**
- B-1b Conduct biological monitoring.**
- B-1d Train project personnel.**
- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.**

- B-1h Restrict the construction of access and spur roads.**
- B-2a Provide restoration/compensation for affected jurisdictional areas.**
- B-2b Identify environmentally sensitive times and locations for tree trimming.**
- B-6a Littering is not allowed.**
- B-6b Survey areas for brush clearing.**
- B-6c Protect mammals and reptiles in excavated areas.**
- B-6d Reduce construction night lighting on sensitive habitats.**
- B-7a Cover all steep-walled trenches or excavations used during construction to prevent the entrapment of wildlife (e.g., reptiles and small mammals).**
- B-7b Minimize impacts to bighorn sheep and provide compensation for loss of critical habitat.**
- B-7c Conduct burrowing owl surveys, and implement appropriate avoidance/minimization/compensation strategies.**
- B-7d Implement appropriate avoidance/minimization strategies for desert tortoise.**
- B-7e Conduct pre-construction surveys and relocation for American badger.**
- B-7f Conduct pre-construction surveys for roosting bats.**

***Impact B-8: Construction activities would result in a potential loss of nesting birds (violation of the Migratory Bird Treaty Act)***

The renewable projects region contains a variety of vegetation communities that provide sites for bird nests. Construction activities would disturb vegetation and have the potential to impact nesting birds. Ground-nesting birds could also be impacted by foot or vehicle/equipment traffic. These impacts, including noise in excess of 60 dB(A) Leq at a nest site during the breeding season (American Institute of Physics, 2005), could result in the displacement of breeding birds, abandonment of active nests, or accidental nest destruction. With the exception of a few non-native bird species, all active bird nests are fully protected against take pursuant to the federal Migratory Bird Treaty Act. It is unlawful to take, possess, or destroy the nest or eggs of any such bird.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact B-8: Construction activities would result in a potential loss of nesting birds (violation of the Migratory Bird Treaty Act)***

- B-1d Train project personnel.**
- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.**
- B-1f Build access roads at right angles to streambeds and washes.**
- B-1g Comply with all applicable environmental laws and regulations.**
- B-1h Restrict the construction of access and spur roads.**
- B-2b Identify environmentally sensitive times and locations for tree trimming.**
- B-2c Avoid sensitive features.**
- B-6b Survey areas for brush clearing.**
- B-8a Conduct pre-construction surveys and monitoring for breeding birds.**
- B-8b Removal of raptor nests.**

***Impact B-9: Construction or operational activities would adversely affect linkages or wildlife movement corridors, the movement of fish, and/or native wildlife nursery sites***

The locations of the solar project sites and transmission lines consists of desert washes that carry only intermittent or ephemeral flows in response to seasonal rain events. None of the washes contain perennial flows and are not expected to support fish and other species that are dependent on permanent water sources. The solar sites and transmission corridors are not expected to impact designated critical habitat for bighorn sheep although the mountains surrounding the solar sites may present appropriate habitat to bighorn sheep. Rock crevices, caves, or other potential features are present to support bat nursery colonies in the project area.

Due to the large extent of the solar project sites that may be completely fenced, wildlife may not be able to move through them and would have to traverse long distances to move around them, unlike along the transmission lines where wildlife can pass freely through the ROW.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact B-9: Adverse effects to linkages or wildlife movement corridors, the movement of fish, and/or native wildlife nursery sites***

- B-1f** Build access roads at right angles to streambeds and washes.
- B-1h** Restrict the construction of access and spur roads.
- B-2c** Avoid sensitive features.
- B-6d** Reduce construction night lighting on sensitive habitats.
- B-9a** Survey for bat nursery colonies.

***Impact B-10: Presence of transmission lines may result in electrocution of, and/or collisions by, listed or sensitive bird species***

Depending on the voltage and design specifications of the transmission lines associated with the solar projects, they may present an electrocution risk to birds. In addition, solar troughs, panels, and dishes may have mirrored or reflective surfaces, and birds may be confused by these surfaces and collide with them. Avian mortality as a result of collision with solar collection surfaces may result. Mortality as a result of collision with transmission project features would be greatest where the movements of migrating birds are the most concentrated.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measure for Impact B-10: Presence of transmission lines may result in electrocution of, and/or collisions by, listed or sensitive bird species***

- B-10a** Utilize collision-reducing techniques in installation of transmission lines.

***Impact B-11: Presence of transmission lines may result in increased predation of listed and sensitive wildlife species by ravens that nest on transmission towers***

Common ravens are known to nest on transmission towers, and they are also known to be opportunistic and will prey upon wildlife species in the vicinity of perching and nesting sites. Common ravens are known to prey upon juvenile tortoises as well as other wildlife species that may be listed or may be considered sensitive. The increase in the number of towers that would result from the solar projects transmission interconnection would result in an increase in potential nesting sites for common ravens. An

increase in the number of ravens nesting in tortoise habitat will likely result in an increase in predation on juvenile tortoises and potentially on other wildlife species (including sensitive and/or listed species).

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measure for Impact B-11: Presence of transmission lines may result in increased predation of listed and sensitive wildlife species by ravens that nest on transmission towers***

**B-11a Prepare and implement a Raven Control Plan.**

***Impact B-12: Maintenance activities would result in disturbance to wildlife and could result in wildlife mortality***

Maintenance of the solar facilities and transmission lines, including such activities as the use of access roads or regular brush clearing around project features, would result in disturbance to wildlife. These disturbances would include temporarily displacing animals and disrupting their breeding and/or foraging activities. Maintenance activities could also result in direct wildlife mortality (e.g., tortoise crushed by truck tire).

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact B-12: Maintenance activities would result in disturbance to wildlife and could result in wildlife mortality***

- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.**
- B-1g Comply with all applicable environmental laws and regulations.**
- B-1h Restrict the construction of access and spur roads.**
- B-2b Identify environmentally sensitive times and locations for tree trimming.**
- B-3a Prepare and implement a Weed Control Plan.**
- B-5c No collection of plants or wildlife.**
- B-6a Littering is not allowed.**
- B-6b Survey areas for brush clearing.**
- B-7d Implement appropriate avoidance/minimization strategies for desert tortoise.**
- B-12a Conduct maintenance activities outside the general avian breeding season.**
- B-12b Protect wildlife.**

## 3.2 Visual Resources

### Methodology

Because the sites of the solar projects are speculative, a detailed visual analysis was not conducted. However, because most of the projects in the region would be located on BLM land, they would be subject to the BLM's Visual Resource Management (VRM) system during project-level visual impact analysis. This is a system for visual impact analysis that BLM requires for use on BLM-administered lands. This approach is described here.

Public lands crossed by the Proposed Project and administered by the BLM have a variety of visual values. These lands are subject to visual resource management objectives as developed using the BLM Visual Resource Management (VRM) System (BLM, 1984, 1986a, 1986b) and presented in the Resource Management Plan for a given unit. The BLM system identifies four VRM Classes (I through IV) with specific management prescriptions for each class. The system is based on an assessment of scenic quality, viewer sensitivity and viewing distance zones.

**Scenic Quality**

Scenic Quality is a measure of the overall impression or appeal of an area created by the physical features of the landscape, such as natural features (landforms, vegetation, water, color, adjacent scenery and scarcity), and built features (roads, buildings, railroads, agricultural patterns, and utility lines). These features create the distinguishable form, line, color, and texture of the landscape composition that can be judged for scenic quality using criteria such as distinctiveness, contrast, variety, harmony, and balance. Table 3.2-1 presents the VRM scenic quality rating characteristics that are evaluated to arrive at one of three scenic quality ratings (A, B, or C) for a given landscape. The three scenic quality ratings can be described as follows:

- **Scenic Quality Class A** – Landscapes that combine the most outstanding characteristics of the region.
- **Scenic Quality Class B** – Landscapes that exhibit a combination of outstanding and common features.
- **Scenic Quality Class C** – Landscapes that have features that are common to the region.

**Table 3.2-1. Visual Resource Management (VRM) Scenic Quality Rating**

Component	Scenic Quality Rating		
Landform	High vertical relief (prominent cliffs, spires, or massive rock outcrops); severe surface variation, highly eroded formations (major badlands or dune systems); detail features dominant and exceptionally striking/intriguing. <span style="float: right;">5</span>	Steep canyons, mesas, buttes, cinder cones, and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features, which are interesting though not dominant or exceptional. <span style="float: right;">3</span>	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features <span style="float: right;">1</span>
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns. <span style="float: right;">5</span>	Some variety of vegetation, but only one or two major types. <span style="float: right;">3</span>	Little or no variety or contrast in vegetation. <span style="float: right;">1</span>
Water	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape. <span style="float: right;">5</span>	Flowing, or still, but not dominant in the landscape. <span style="float: right;">3</span>	Absent or present, but not noticeable. <span style="float: right;">0</span>
Color	Rich color combinations, variety or vivid color; or pleasing contrasts in the soil, rock, vegetation, water or snow fields. <span style="float: right;">5</span>	Some intensity or variety in colors and contrast of the soil, rock, and vegetation, but not a dominant scenic element. <span style="float: right;">3</span>	Subtle color variations, contrast, or interest; generally mute tones. <span style="float: right;">1</span>
Influence of Adjacent Scenery	Adjacent scenery greatly enhances visual quality. <span style="float: right;">5</span>	Some intensity or variety in colors and contrast of the soil, rock, and vegetation, but not a dominant scenic element. <span style="float: right;">3</span>	Adjacent scenery has little or no influence on overall visual quality. <span style="float: right;">0</span>
Scarcity	One of a kind; or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. <span style="float: right;">5</span>	Distinctive, though somewhat similar to others within the region. <span style="float: right;">3</span>	Interesting within its setting, but fairly common within the region. <span style="float: right;">1</span>

**Table 3.2-1. Visual Resource Management (VRM) Scenic Quality Rating**

Component		Scenic Quality Rating				
Cultural Modifications	Modifications add favorably to visual variety while promoting visual harmony.	2	Modifications add little or no visual variety to the area, and introduce no discordant elements.	0	Modifications add variety but are very discordant and promote strong disharmony.	- 4
Scenic Quality Rating:		A = 19 or more	B = 12 to 18	C = 11 or less		

***Viewer Sensitivity***

Viewer Sensitivity is a factor used to represent the value of the visual landscape to the viewing public, including the extent to which the landscape is viewed. For example, a landscape may have high scenic qualities but be remotely located and, therefore, seldom viewed. Sensitivity considers such factors as visual access (including duration and frequency of view), type and amount of use (See Table 3.2-2), public interest, adjacent land uses, and whether the landscape is part of a special area (e.g., California Desert Conservation Area or Area of Critical Environmental Concern). The three levels of viewer sensitivity can generally be defined as follows:

- **High Sensitivity.** Areas that are either designated for scenic resources protection, or receive a high degree of use (includes areas visible from roads and highways receiving more than 45,000 visits [vehicles] per year). Typically within the foreground/midground viewing distance (see Table 3.2-3).

**Table 3.2-2. Amount of Use Classifications**

Type Area	High	Moderate	Low
Roads & Highways	More than 45,000 visits/yr	5,000 to 45,000 visits/yr	Less than 5,000 visits/yr
Rivers & Trails	More than 20,000 visits/yr	2,000-20,000 visits/yr	Less than 2,000 visits/yr
Recreation Sites	More than 10,000 visitor-days/yr	2,000-10,000 visitor-days/yr	Less than 2,000 visitor-days/yr

**Table 3.2-3. Distance Zones**

f/m (foreground/midground).....	0 to 3–5 miles
b (background) .....	5-15 miles
s/s.....	seldom seen areas

- **Medium Sensitivity.** Areas lacking specific, or designated, scenic resources protection, but are located in sufficiently close proximity to be within the viewshed of the protected area. Includes areas that are visible from roads and highways receiving 5,000 to 45,000 visits (vehicles) per year. Typically within the background viewing distance.
- **Low Sensitivity.** Areas that are remote from populated areas, major roadways, and protected areas or are severely degraded visually. Includes areas that are visible from roads and highways receiving less than 5,000 visits (vehicles) per year.

It should be noted that all of the BLM lands within the study area are located within the California Desert Conservation Area (CDCA). This designation imparts a High rating for Viewer Sensitivity for all lands within the CDCA.

***Viewing Distance Zones***

Landscapes are generally subdivided into three distance zones based on relative visibility from travel routes or observation points. The foreground/midground (f/m) zone includes areas that are less than three to five

miles from the viewing location. The foreground/midground zone defines the area in which landscape details transition from readily perceived, to outlines and patterns. The background (b) zone is generally greater than 5, but less than 15, miles from the viewing location. The background zone includes areas where landforms are the most dominant element in the landscape, and color and texture become subordinate. In order to be included within this distance zone, vegetation should be visible at least as patterns of light and dark. The seldom-seen zone (s/s) includes areas that are usually hidden from view as a result of topographic or vegetative screening or atmospheric conditions. In some cases, atmospheric and lighting conditions can reduce visibility and shorten the distances normally covered by each zone (BLM, 1986b).

***Visual Resource Management Classes***

The VRM Class for a given area is typically arrived at through the use of a classification matrix similar to that presented in Table 3.2-4. By comparing the scenic quality, visual sensitivity, and distance zones, the specific VRM class can be determined. The exception to this process is the Class I designation, which is placed on special areas where management activities are restricted (e.g., wilderness areas).

**Table 3.2-4. Visual Resource Management (VRM) Classification Matrix**

Visual Sensitivity Levels		High			Medium			Low
Special Areas		I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II
	B	II	III	III	III	IV	IV	IV
			IV					
C	III	IV	IV	IV	IV	IV	IV	
Distance Zones		f/m	b	s/s	f/m	b	s/s	s/s

The objectives of each VRM classification as stated in the BLM VRM *Visual Resource Inventory Manual* are as follows:

- **VRM Class I.** The objective 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.
- **VRM Class II.** The objective 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.
- **VRM Class III.** The objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate or lower. 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.
- **VRM Class IV.** The objective is to provide for management activities which require major modification 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.

Based on this approach, all lands within the California Desert Conservation Area are assigned a High Visual Sensitivity Level, and the generalized visual impact assessment that follows is based on this designation.

## Environmental Setting

West of the City of Blythe, the renewable project region spans the broad, open southern portion of the Chuckwalla Valley, a desert basin characterized by low-growing grasses and shrubs and surrounded by rugged, angular mountains. To the north is the broad flat expanse of the central Chuckwalla Valley while to the south is the steeply rising, and rugged Chuckwalla Mountains.

Throughout this portion of the study area, there is minimal development aside from the Interstate 10 freeway. The existing DPV1 transmission line is a noticeable built feature with industrial character when viewing opportunities are sufficiently close. At greater distances, the lattice design of the structures enable the line to blend fairly effectively with background terrain. However, on open valley floors or where structures pass over ridges and raised alluvial fans, structure skylining can occur (extending above the horizon line) which increases structure visibility and prominence.

## Environmental Impacts and Mitigation Measures

### *Impact V-1: Short-term visibility of construction activities, equipment, and night lighting*

**Solar Energy Sites.** Construction activities at the renewable projects sites would include the visual intrusion of construction vehicles, equipment, materials, and work force at each site. While the construction impacts would be temporary, they would generally occur for several years' duration.

**Transmission Lines.** Construction impacts on visual resources would result from the presence and visual intrusion of construction vehicles, equipment, materials, and work force along the transmission line routes. Construction impacts on visual resources would also result from the temporary alteration of landforms and vegetation along the ROWs. Vehicles, heavy equipment, project components, and workers would be visible during access and spur road clearing and grading, structure erection, conductor stringing, and site/ROW clean-up and restoration. However, construction activities along the transmission line routes would be transient and of short duration as construction progresses along the routes. As a result, affected viewers would be aware of the temporary nature of project construction impacts, which would decrease their sensitivity to the impact.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

### *Mitigation Measures for Impact V-1: Visibility of construction activities, equipment, and night lighting*

**V-1a Reduce visibility of construction activities and equipment.**

**V-1b Reduce construction night lighting impacts.**

**V-1c Prohibit construction marking of natural features.**

### *Impact V-2: Long-term visibility of land scars and vegetation clearance in arid and semi-arid landscapes*

Land scarring from use of staging areas and construction yards, construction of new access and spur roads, and activities adjacent to construction sites and along the ROW can be long-lasting (several years) in arid and semi-arid environments where vegetation recruitment and growth are slow. In-line views of

linear land scars or newly bladed roads are particularly problematic and introduce adverse visual change and contrast by causing unnatural vegetative lines and soil color contrast from newly exposed soils. Vegetation clearance could occur in conjunction with project construction or during the life of the project if vegetation is cleared as part of ongoing ROW maintenance or if a changed vegetation structure is maintained within the right of way.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact V-2: Long-term visibility of land scars and vegetation clearance in arid and semi-arid landscapes***

- V-2a Reduce in-line views of land scars.**
- V-2b Reduce visual contrast from unnatural vegetation lines.**
- V-2c Reduce color contrast of land scars.**
- V-2d Minimize vegetation removal.**
- G-1b Implement erosion control procedures.**

## Operational Impacts

The solar facilities and associated transmission lines would result in visual impacts during the long-term operation of the projects. Toward the end of the multi-year construction periods and during project operations, the project sites would be highly visible from locations adjacent to the site. Long-term, operational visual impacts would be experienced by travelers on I-10 and on local roads, and recreationists accessing BLM lands in the region.

***Impact V-3: Inconsistency with BLM VRM Class III or lower management objectives due to introduction of structure contrast, industrial character, view blockage, skylining and glare associated with the solar generation projects and associated facilities***

Views vantage points on I-10 projects and local roads immediately adjacent to the solar renewable projects would be dominated by a vast expanse of tens of thousands of solar collection dishes, troughs, or panels, which would be visible within the foreground of views and within the primary cone of vision of travelers on these roads. From these locations, the project would appear to completely transform a desert landscape into an industrial setting with prominent structures that would skyline (extend above the horizon line) and cause view blockage of the background sky and the distant Palen, McCoy, and Chuckwalla Mountains. Also, from some vantage points, viewers would be subjected to glare from the mirrored or reflective surfaces of the solar collection/concentrating devices. The overall resulting level of change would generally be high, which would not meet the VRM Class III objective of a moderate (or lower) degree of visual change, and it would not meet the higher standards of VRM Class II objectives.

There is no known mitigation strategy to reduce the severity of this impact.

***Impact V-4: Inconsistency with Interim BLM VRM Class III management objective due to introduction of structure contrast, industrial character, view blockage and skylining associated with transmission interconnections***

Views from vantage points in the immediate vicinity of the transmission interconnection lines would have open, unobstructed views of the lines. The lines could be visible to 4WD/OHV recreationists at the nearby recreation sites, including the Ford Dry Lake, a 1,135 acres off-highway recreation area. New transmission structures would cause skylining as they cross the flat expanse of the Chuckwalla Valley,

resulting in view blockage of sky and mountains. The resulting structural complexity of the transmission line corridors, associated industrial character, and view blockage would cause an overall level of change that would be moderate-to-high.

The BLM's Visual Resource Management (VRM) Class III objective allows for a moderate or lower degree of visual change that, while it may attract attention, should not dominate the view of the casual observer. The moderate-to-high level of visual change that would be caused by the new transmission lines would not be consistent with the applicable VRM Class III management objective.

Implementation of mitigation measures similar to the following would reduce the severity of impacts.

***Mitigation Measures for Impact V-4: Inconsistency with Interim BLM VRM Class III management objective due to introduction of structure contrast, industrial character, view blockage and skylining associated with the transmission interconnections***

**V-4a Reduce visual contrast of towers and conductors.**

**V-4b Use non-specular design to reduce conductor visibility and visual contrast.**

### 3.3 Land Use

#### Methodology

Land use maps, including the BLM GeoCommunicator website maps, and aerial photographs were consulted to determine current land uses in the vicinity of the solar renewable projects.

#### Environmental Setting

The land in the area of the solar generation projects and associated facilities is generally under the jurisdiction of the BLM and unincorporated Riverside County. The solar projects would cross two Areas of Critical Environmental Concern (ACEC's); in addition, several other ACEC's, Wilderness areas, and Joshua Tree National Park are located throughout the area, including:

- Mule Mountains ACEC
- Chuckwalla Valley Dune Thicket ACEC
- Chuckwalla Mountains Wilderness Area
- Alligator Rock ACEC
- Big Maria Mountain Wilderness
- Palen Mountains Wilderness Area
- Joshua Tree National Park

The area can be generally characterized as open space and the nearest communities would be Desert Center and Blythe. There are a few scattered rural residences and the community of Tamarisk Grove, located near Desert Center that would be located in the affected area as well. Other land uses in the vicinity of the projects include agriculture (irrigated and grazing lands), the 1,700-acre Ironwood State Prison, which is situated approximately 10 miles west-southwest of Blythe and includes a 1.18-MW ground-mounted photovoltaic solar power system that is operated by SunEdison (SunEdison, 2008). Public roadways (Interstate 10 and local roadways) and the Blythe Airport, Desert Center Airport, and Julian Hinds Private Airstrip are located in the general vicinity of the solar projects.

The "Arizona and California Railroad (ARZC), a RailAmerica short line property, would be adjacent to a solar renewable facility. The ARZC connects Cadiz, California with Matthe, Arizona where it meets up with a BNSF railroad connecting with Phoenix, Arizona. The ARZC has a 50 mile branch line from Rice that passes through Blythe and would be located within one of the solar facilities northwest of Blythe. The ARZC transports petroleum gasses, steel, and lumber (RailAmerica, 2008).

Land use classifications solar renewable projects region include agriculture, parks and recreation/open space, public facilities and utilities, and residential uses.

See Section 3.4 (Wilderness and Recreation) for a detailed discussion of recreation areas affected and Section 3.5 (Agriculture) for a detailed discussion of agricultural areas affected.

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact L-1: Construction would temporarily disrupt land uses at or near the solar facilities or transmission alignments***

The solar renewable projects would be constructed on up to approximately 127,500 acres west of the City of Blythe. Sensitive land uses within the solar renewable projects and surrounding areas include open spaces, recreational use, and residential uses. Desert Center and the community of Tamarisk Grove are located less than 1,000 feet from the border of some of the solar renewable projects. Additional rural residences occur near to Desert Center and Blythe; however, because of the limited number of residences and the large acreage of the solar renewable projects it is assumed that the solar projects would not be located immediately adjacent to the residences. Sensitive land uses adjacent to the solar renewable projects include BLM Wilderness and ACECs and transmission interconnections may cross some of the BLM ACECs.

Construction of the solar renewable facilities would create noise and dust as a result of heavy construction equipment operating on temporary and permanent access roads, and moving building materials to and from construction staging areas. This would result in temporary disturbances to those rural residential and wilderness areas detailed above. Mitigation measures to reduce noise and air quality impacts are presented in Sections 3.8 and 3.12, respectively, but these measures would not eliminate the disturbance.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

#### ***Mitigation Measures for Impact L-1: Construction would temporarily disturb the land uses it traverses or adjacent land uses***

- L-1a Prepare Construction Notification Plan.**
- L-1b Notify property owners and provide access.**
- L-1c Flag ROW boundary and environmentally sensitive areas.**

### Operational Impacts

#### ***Impact L-2: Presence of a project component would divide an established community or disrupt land uses at or near the solar facilities or transmission alignments***

As noted previously, the solar projects would cross primarily open space and public roadways. The alternative would traverse land used for agriculture, recreation/open space, public facilities and utilities, and residential uses. Sensitive land uses in the area are residential uses and BLM Wilderness and ACECs. Refer to Sections 3.4 and 3.5 for an analysis of operational impacts to wilderness and recreation and agricultural resources, respectively. In addition, Section 3.9, Transportation and Traffic, includes operational impacts to public roadways and railways and Section Noise 3.8, provides a discussion of noise impacts.

Most the solar renewable projects would not physically divide these established uses but would traverse between and border them. However, because the solar projects are speculative, their exact site locations are unknown at this time. Some rural residences are located in close proximity to the boundaries of the solar renewable projects and as such, land use conflicts between the solar renewable projects and existing/planned development could occur.

The transmission interconnection would not constitute a physical division of an established community but would generally follow property boundaries, and would not bisect them. Towers and lines would be present, but travel or connections within the regions would not be impeded so as to create a divide. Due to the large number and size of the BLM Wilderness and ACECs, the transmission interconnections may be proposed to cross these sensitive uses. However, transmission interconnections would be permitted with each generator and routing would be dependent on BLM input on its sensitivity of lands.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact L-2: Presence of a transmission line or substation would divide an established community or disrupt land uses at or near the alignment***

**L-1a Prepare Construction Notification Plan.**

**L-1b Notify property owners and provide access.**

**L-2a Revise project elements to minimize land use conflicts.**

## 3.4 Wilderness and Recreation

### Methodology

BLM recreation maps and the BLM Palm Springs - South Coast Field Office website were consulted to determine current recreational uses in the vicinity of the solar renewable projects.

### Environmental Setting

The affected area has a large concentration of recreation and WAs. Recreational activities would include off-highway vehicle (OHV) use on designated OHV areas, including the Ford Dry Lake, and on unpaved roadways throughout the area. Following are descriptions of the recreational and WAs that would be located in the vicinity of the solar generation projects and associated facilities:

- **Mule Mountains ACEC.** The 4,092-acre Mule Mountains ACEC is managed by the BLM, California Desert District, and is designated for its prehistoric values (BLM, 1980).
- **Chuckwalla Valley Dune Thicket ACEC.** The 2,273-acre Chuckwalla Mountains ACEC is managed by the BLM, California Desert District, and is designated for its wildlife habitat (BLM, 1980).
- **Chuckwalla Mountains Wilderness Area.** The 84,614-acre Chuckwalla Mountains Wilderness Area was designated by Congress in 1994, and is managed by the BLM, California Desert District. Recreational activities within this area include hiking, camping, and rock scrambling (Wilderness, 2008a).
- **Big Maria Mountains Wilderness Area.** The 45,402-acre Big Maria Mountains Wilderness was designated by Congress in 1994, and is managed by the BLM, California Desert District. There are no trails but several old jeep tracks, closed to vehicular traffic, provide foot access to the Wilderness (Wilderness, 2008b).

- **Alligator Rock ACEC.** The 7,726-acre Alligator Rock ACEC is managed by the BLM, California Desert District. It is designated for its archaeological values (BLM, 1980).
- **Joshua Tree National Park.** Congress changed the status of the Joshua Tree National Monument to a national park in October 1994 (National Park Service, 1997). The 794,000-acre Joshua Tree National Park is managed by the National Park Service. Recreational activities available at the park include backpacking, camping, mountain biking, rock climbing, geologic tours, birding, horseback riding, and star gazing (National Park Service, 2008).
- **Palen/McCoy Wilderness Area.** The 212,982-acre Palen/McCoy Wilderness Area was designated by Congress in 1994, and is managed by the BLM, California Desert District (Wilderness, 2008c). Accessed from Highway 177 and 4WD roads.
- **Palen Dry Lake ACEC.** The Palen Dry Lake ACEC is managed by the BLM, California Desert District. It is designated for its archaeological values.
- **Corn Springs ACEC.** Established in 1980, the Corn Springs ACEC is managed by the BLM, California Desert District. Accessed from Corn Springs Road.
- **Desert Lily Preserve ACEC.** The Desert Lily Preserve ACEC is managed by the BLM, California Desert District and accessed from Highway 177.

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact WR-1: Construction activities would temporarily reduce access and visitation to recreation or wilderness areas***

Construction of the solar renewable facilities would involve the use of local roads for construction vehicle access given the limited roadways in the area. Widening of these roadways may be necessary to accommodate construction vehicle sizes and necessary turnarounds. Numerous BLM designated wilderness or recreation areas are located in the solar renewable region, including the Ford Dry Lake which is a designated OHV area. The location of construction equipment along roadways may temporarily preclude or constrain recreational access to this region. Several ACECs and wilderness areas, listed above, could be traversed by transmission interconnections within a new ROW.

While construction of the solar renewable facilities and transmission interconnection would not limit access to any of the nearby recreational uses, the noise and presence of heavy equipment associated with project construction may temporarily reduce visitation to recreational areas. Recreationists may cancel or schedule their visits to avoid construction periods thereby resulting in temporarily reduced visitation.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

#### ***Mitigation Measures for Impact WR-1: Construction activities would temporarily reduce access and visitation to recreation or wilderness areas***

**WR-1a Coordinate construction schedule and activities with the authorized officer for the recreation area.**

**WR-1b Provide temporary detours for trail users.**

**WR-1c Coordinate with local agencies to identify alternative recreation areas.**

## Operational Impacts

### ***Impact WR-2: Presence of a solar project, transmission line or substation would change the character of a recreation area, diminishing its recreational value***

Dispersed recreation occurs within the solar renewable projects region. Many recreational resources, particularly in the desert, are valued for their solitude and expansive scenic setting. As described in Section 3.2, Visual Resources, project features would be built in an area that does not presently contain structures of similar scale and character. Consequently, project features would be highly noticeable to recreationists and constitute a permanent visual impact. Visual Resources (see Section 3.2) and Noise (see Section 3.8) mitigation measures reduce visual impacts and corona noise from the transmission interconnections, but the presence of numerous large scale solar renewable projects would diminish the value of the recreational experience.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

### ***Mitigation Measure for Impact WR-2: Presence of a solar project, transmission line or substation would change the character of a recreation area, diminishing its recreational value***

#### **V-4a Reduce visual contrast of towers and conductors.**

### ***Impact WR-3: Presence of a solar project or transmission line would permanently preclude recreational activities***

As described above, the sites of the solar projects are speculative. However, use of land currently designated for recreation as solar projects could permanently preclude recreational activities including the OHV use of the Ford Dry Lake just south of the Palen/McCoy Wilderness Area. While exact locations of project features have not been determined, because of the large number of solar projects in the region, structures could be sited on or adjacent to the OHV or other recreational uses.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

### ***Mitigation Measure for Impact WR-3: Presence of a solar project or transmission line would permanently preclude recreational activities***

#### **WR-3a Coordinate tower and road locations with the authorized officer for the recreation area.**

## 3.5 Agriculture

### Methodology

Department of Conservation maps and aerial photographs were consulted to determine current agriculture uses in the vicinity of the solar renewable projects.

### Environmental Setting

Prime Farmland, Farmland of Statewide Importance and Unique Farmland and Farmland of Local Importance are located in the Palo Verde Valley near Blythe and in the Coachella Valley south of the project area. However, no soil survey data exists for most of the affected area, and therefore, the California

Department of Conservation Farmland Mapping and Monitoring Program does not provide important farmland data or maps for this area. As a result, little, if any, mapped Important Farmland or Williamson Act lands would be affected by the solar generation projects and associated facilities (DOC, 2006).

The solar renewable region would include the Ford Dry Lake grazing allotment which encompasses 49,682 acres of land designated for sheep grazing (BLM, 2002). Additionally, a limited amount of agriculture occurs in the vicinity of Desert Center and northwest of the city of Blythe.

## Environmental Impacts and Mitigation Measures

### ***Impact AG-1: Construction activities would temporarily interfere with Active Agricultural Operations***

There is minimal agriculture in the solar projects region due to limited water availability and desert soil. Some irrigated agriculture does occur, confined to the Desert Center region and northwest of Blythe. The Ford Dry Lake grazing allotment is located north of I-10 and south of the Palen/McCoy Wilderness Area. Construction activities could temporarily interfere with Active Agricultural Operations by damaging or removing crops or precluding planting; impeding access to certain fields or plots of land and obstructing farm vehicles and equipment; or disrupting drainage and irrigation systems (including self-propelled irrigation rigs), all of which could result in the temporary withdrawal of land from production, thereby reducing agricultural productivity on the affected land.

Implementation of mitigation measures commensurate with the following would reduce the severity of impacts.

### ***Mitigation Measures for Impact AG-1: Construction activities would temporarily interfere with Active Agricultural Operations***

**L-1a Prepare Construction Notification Plan.**

**L-1b Notify property owners and provide access.**

**L-1c Flag ROW boundary and environmentally sensitive areas.**

**AG-1a Avoid interference with agricultural operations.**

**AG-1b Restore compacted soil.**

**AG-1c Coordinate with grazing operators.**

### ***Impact AG-2: Operation would permanently interfere with Active Agricultural Operations***

Loss of agriculture land would occur if the solar projects or related facilities were located on or crossed agricultural land, including the Ford Dry Lake grazing allotment. Because of the limited agriculture land in the vicinity of the project, the solar projects could be relocated to non-agricultural areas. However, this report conservatively assumes that some loss of agricultural land would occur due to the large amount of acres that could be developed for renewable projects and transmission interconnects. In addition to the permanent loss of land under Active Agricultural Operation, the solar projects could result in other adverse agricultural impacts in the vicinity of the projects, including disrupting farming facilities or operations.

### ***Mitigation Measure for Impact AG-2: Operation would permanently interfere with Active Agricultural Operations***

**AG-1a Avoid interference with agricultural operations.**

## 3.6 Cultural Resources

### Methodology

Due to the speculative nature of the solar renewable projects and the imprecise location of their boundaries, cultural searches and site surveys were not performed. However, the ethnographic, prehistoric, and historic backgrounds of the solar renewable project region are presented in the following section. Cultural impacts presented in the subsequent section are general, as they are not based on record searches of the project sites nor field work. Specific cultural studies would be carried out prior to individual project implementation.

### Environmental Setting

**Ethnographic Background.** The solar renewable project region is in the general vicinity of the ethnographic territories of the Cahuilla, Chemehuevi, Quechan, and Panya (Halchidhoma) people. Section D.7 of the DPV2 Final EIR/EIS provides a brief description of each of these groups that was taken from *Cultural Resources Inventory of the Proposed Devers to Palo Verde II 500kV Transmission Line, Riverside County, California* (Carrico et al., 2005:14-16).

**Prehistoric Background.** The prehistoric cultural sequence within the solar renewable project area has been summarized by Carrico et al. (2005:13-14) and is included in Section D.7 of the DPV2 Final EIR/EIS. The following two major periods are represented: the San Dieguito/Mohave (10,000–1200 B.C.) and the Amargosa (1200 B.C.–A.D. 1200).

**Historic Background.** The historic context of the solar renewable project area has been summarized by Mooney/Hayes, LLC (Carrico et al., 2005:16-18) and is included in Section D.7 of the DPV2 Final EIR/EIS. The story of the California deserts is one of intrepid explorers, high hopes, low fulfillment, and miles of arid lands with relatively sparse human populations (Bard, 1972). Until the post-World War II era of off-road vehicle use and easier access to desert recreation, mining, dry farming, cattle grazing, and transportation across the desert lands were the focus of settlement and land use. In general, these broad themes of mining, farming, livestock, transportation, and in the post 1940 era, military activities, form a major historical and cultural framework for understanding the history of the region (Warren and Roske, 1978).

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact C-1: Construction of the project would cause an adverse change to known historic properties***

“Historic properties,” as described above, are those resources (including historical built environment resources, prehistoric archaeological sites, historical archaeological sites, and traditional cultural properties — regardless of their age) that are determined by a federal, State, or local agency to be eligible for listing on a historic register.

Should historic properties be present at any of the solar renewable project sites, mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact C-1: Construction of the project would cause an adverse change to known historic properties***

- C-1a Inventory and evaluate cultural resources in Final APE.**
- C-1b Avoid and protect potentially significant resources.**
- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1e Monitor construction at known ESAs.**
- C-1f Train construction personnel.**

***Impact C-2: Construction of the project would cause an adverse change to sites known to contain human remains***

The potential to discover unknown buried Native American human remains or sacred features, in the form of primary inhumations, cremations, ceremonial bundles, or mourning ceremony features during construction could exist. Should the solar renewable project sites be determined to contain human remains, or should human remains be discovered during construction activities, mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact C-2: Construction of the project would cause an adverse change to sites known to contain human remains***

- C-1b Avoid and protect potentially significant resources.**
- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1e Monitor construction at known ESAs.**
- C-1f Train construction personnel.**
- C-2a Properly treat human remains.**

***Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains***

Ground disturbing activities, including grading and contouring, excavation for solar panel and transmission tower foundations, would occur at the solar renewable project sites and along associated transmission ROWs. Types of subsurface features that could be encountered include prehistoric resources such as buried living surfaces, trash deposits, hearths, burials and cremations. Historical resources that could be unearthed during project construction include refuse pits and privies. Buried archaeological resources may be encountered during vegetation removal at tower, panel/trough, and pull site locations, grading of access roads, or excavation associated with tower and solar panel construction.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact C-3: Construction of the project would cause an adverse change to unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains***

- C-1c Develop and implement Historic Properties Treatment Plan.**
- C-1d Conduct data recovery to reduce adverse effects.**
- C-1f Train construction personnel.**

**C-2a Properly treat human remains.**

**C-3a Monitor construction in areas of high sensitivity for buried resources.**

***Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties***

A traditional cultural resource or traditional cultural property (TCP) can include Native American sacred sites (rock art sites) and traditional resources or ethnic communities important for maintaining the cultural traditions of any group. Should Traditional Cultural Properties be determined to be present at any of the solar renewable project sites or along associated transmission lines, mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measure for Impact C-4: Construction of the project would cause an adverse change to Traditional Cultural Properties***

**C-4a Complete consultation with Native American and other Traditional Groups.**

### Operational Impacts

***Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties***

Direct and indirect impacts could occur to historic properties within and in the vicinity of the solar renewable project area as a result of operation and long-term presence of the solar facilities and associated transmission lines. Direct impacts could result from maintenance or repair activities, while increased erosion and access could result in indirect project impacts

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact C-5: Project operation and maintenance would cause an adverse change to known historic properties***

**C-1b Avoid and protect potentially significant resources.**

**C-1c Develop and implement Historic Properties Treatment Plan.**

**C-2a Properly treat human remains.**

**C-4a Complete consultation with Native American and other Traditional Groups.**

**C-5a Protect and monitor NRHP- and/or CRHR-eligible properties.**

## 3.7 Paleontological Resources

### Methodology

Due to the speculative nature of the solar renewable projects and the imprecise location of their boundaries, paleontological searches and site surveys were not carried out. The natural setting and paleontological background of the solar renewable project region are presented in the following section. Paleontological impacts presented in the subsequent section are general, as they are not based on record searches of the project sites nor field work. Specific paleontological studies would be carried out prior to individual project implementation.

## Environmental Setting

### Natural Setting and Paleontological Background

The solar renewable project area is located within the Sonoran Desert, which is located in the vast Colorado Desert Region. Within California, this area is composed of a chain of northwest to southeast trending mountain ranges intersected with broad alluvium-filled basins. Some of these ranges form a natural barrier between the greater Colorado Desert to the west and the Colorado River. Because much of the solar renewable project area is considered low-lying desert basin, elevations remain low.

The solar renewable project area lies within the Salton Rift, a distinct geomorphologic feature consisting of a massive graben formed by the interface of portions of the North American and Pacific plates. The San Andreas Fault and Transverse Range are the most prominent geomorphic features of this plate boundary (Schaefer, 2003:14). Groundwater settles along these fault fractures and in some areas seeps to the surface to produce and support oasis environments (Carrico et al., 2005a:9). The Coachella Valley has been filled by enormous quantities of colluvial and alluvial sediments due to the ongoing movement within the Salton Trough. The series of great lakes, sometimes referred to as the Blake Sea, Lake LeConte, or Lake Cahuilla, have filled the Salton Trough with massive deposits of lacustrine sediments and miles of residual shoreline formations can be seen today (Schaefer, 2003:14). Even as the trough deepens, the Colorado River continues to fill it with sediments. Before the river was dammed, large amounts of sediment were deposited in the lower delta channels due to the slower flow of the river. Local flooding contributed to more sedimentation on the fan. The general height of the delta was raised and the stream channel margins were lowered due to continuous silt deposition. When large flood events occurred, an enormous freshwater lake would form from the result of “rapid filling of the Salton Trough by waters of the Colorado River. While they lasted, these lakestands became the center of flourishing plant and animal communities that in turn drew human groups from around the region” (Schaefer, 2003:15).

A variety of geologic rock units are located in the vicinity of the solar renewable project area. These rock units, as described by the San Bernardino County Museum (Scott, 2003), are discussed below, in order from oldest to youngest.

- **Mesozoic Granitic Rocks.** Granitic rocks of several types and ages, primarily Mesozoic but possibly including some pre-Mesozoic rocks. These exposures of granite, quartz monzonite, alaskite, syenite porphyry, diorite and granodiorite have low potential to contain fossil resources.
- **Maniobra Formation.** These marine sandstones and siltstones in the northwestern Orocochia Mountains contain fossils dating to the early and middle Eocene Epoch (Jennings, 1967; Squires and Advocate, 1986; Squires, 1991). The Maniobra Formation consists of brown shales, sandstones, conglomerates and sedimentary breccias deposited on a crystalline basement. Near-shore facies appear to grade into deeper-water facies to the south and southwest.
- **Ocotillo Conglomerate.** The Ocotillo Conglomerate, which overlies the fossiliferous Palm Springs Formation, is a northern extension of the fossiliferous Ocotillo Formation, which in the Anza-Borrego Desert has yielded abundant fossils of mammoths, saber-toothed cats, ground sloths, short-faced bears, horses, camels, birds, reptiles and fish (Downs and Miller, 1994). No significant fossils have been recorded from exposures of the Ocotillo Formation in the Indio Hills or the Mecca Hills.
- **Cabazon Fonglomerate.** The Cabazon Conglomerate is a boulder conglomerate with abundant sand and silt along with some clay derived from the San Bernardino Mountains and transported by the Whitewater River. The formation may be temporally correlative with the Pleistocene beds of the San

Timoteo Formation. This conglomerate has been extensively folded, faulted and dissected, and so it is unlikely that it would contain fossil resources.

- **Pleistocene Older Alluvium (undifferentiated).** Older Pleistocene sediments throughout southern California and the Inland Empire have been repeatedly demonstrated to be highly fossiliferous (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer et al., 1998, 1999; Anderson et al., 2002).
- **Pleistocene Fan Deposits.** Like older Pleistocene alluvial sediments, Pleistocene fan deposits have frequently been demonstrated to be highly fossiliferous (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer et al., 1998,1999).
- **Holocene Alluvium.** This sedimentary unit, deposited more recently than approximately 10,000 years ago, is too young to contain fossil resources.
- **Holocene Dune Sand.** These windblown sediments are too young to contain fossil resources.

The solar renewable project area is located in the northern portion of the Colorado Desert Bioregion which comprises nine general “vegetation types including conifer, woodland, shrub, grassland, desert, urban, agriculture, barren, and water” (Carrico et al., 2005a:12). Six floral communities are found within this Bioregion including: creosote bush scrub, stem-succulent scrub, semi-succulent scrub, desert dune sand plant, desert microphyll woodland, and alkali sink scrub (Carrico et al., 2005a:12, 13; Schaefer, 2003:17).

The paleontologic units throughout the solar renewable project area vary in sensitivity from Undetermined to High paleontologic sensitivity.

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact PAL-1: Construction of the transmission line would destroy or disturb significant paleontological resources***

The potential to discover paleontological resources during construction of the solar renewable energy projects exists. Areas determined to have a high paleontological sensitivity would be impacted by construction-related ground disturbances such as the building or improvement of access roads, borehole drilling, trenching, excavating, grading, and vegetation removal.

Mitigation measures commensurate with the following would reduce the severity of impacts.

#### ***Mitigation Measures for Impact PAL-1: Construction of the project would destroy or disturb significant paleontological resources***

- PAL-1a**      **Inventory and evaluate paleontological resource in the Final APE.**
- PAL-1b**      **Develop Paleontological Monitoring and Mitigation Plan.**
- PAL-1c**      **Monitor construction for paleontology.**
- PAL-1d**      **Conduct paleontological data recovery.**
- PAL-1e**      **Train construction personnel.**

### Operational Impacts

There are no anticipated impacts to paleontological resources during operation of the solar renewable projects.

## 3.8 Noise

### Methodology

Due to the speculative nature of the solar renewable projects and the imprecise location of their boundaries, noise surveys were not carried out. Google Earth aerial photos were used to identify sensitive receptors within the solar renewable projects region; and land use maps were used to identify recreation and wilderness areas. The natural setting and sensitive receptors within the solar renewable project region are presented in the following section. Noise impacts presented in the subsequent section are general, as noise levels have not been recorded along the project sites. Existing ambient noise level studies would be carried out prior to individual project implementation.

### Environmental Setting

**Ambient Noise Levels.** Remote desert lands with few occupied uses provide ambient noise levels generally below 50 Ldn, except when in close proximity to roads or transmission lines. I-10 is a major noise source in this undeveloped area. The existing DPV1 transmission line is also a notable noise source in the vicinity of many of the solar renewable projects, at times over 60 Ldn. Two small airports, the Desert Center Airport and the Julian Hinds Private Airstrip, are located in the solar renewable project region (AirNav, 2008). In addition, the Blythe Airport is located approximately 2.25 miles north of a solar energy facility and approximately three miles south of a solar energy facility. Because of their distance and infrequent activity, these small airports do not notably affect ambient noise levels near the route.

**Noise-Sensitive Receptors.** Widely scattered homesteads occur in the unincorporated areas of the Chuckwalla Valley, and more populated developed areas include the unincorporated rural communities of Desert Center, Ripley, Mesaville, Inca, Cox, and Midland, and the incorporated City of Blythe.

In addition to Joshua Tree National Park, recreational areas include some designated as ACECs and Wilderness. These areas are listed in Section 3.4 above.

### Environmental Impacts and Mitigation Measures

#### Construction Impacts

***Impact N-1: Construction noise would substantially disturb sensitive receptors and violate local rules, standards, and/or ordinances***

Construction and vehicle activity along all transport access routes would cause increased noise impacts. Some rural residences occur within 1,000 feet of the solar projects, and additional rural residences may be impacted by the construction of the transmission interconnections, especially near the town of Desert Center. Night work could be necessary to cross I-10 and other roads or to avoid periods of high electrical demand, should this be required for the transmission interconnections.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact N-1: Construction noise would substantially disturb sensitive receptors and violate local rules, standards, and/or ordinances***

**L-1a Prepare Construction Notification Plan.**

**N-1a Implement Best Management Practices for construction noise.**

***Impact N-2: Construction activity would temporarily cause groundborne vibration***

Excessive groundborne vibration from construction is not anticipated to occur at any receptor, because of sufficient distance. No mitigation measures are recommended.

**Operational Impacts**

***Impact N-3: Permanent noise levels would increase due to corona noise from operation of the transmission lines and noise from other project components***

Operational noise would not cause any local ordinance to be violated or any substantial change in existing noise levels at a noise-sensitive receptor. Operating the solar renewable facilities and associated transmission lines would cause an increase in ambient noise that would be more than 5 dBA. Some rural residences occur within 1,000 feet of the solar projects and the transmission interconnections.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact N-3: Permanent noise levels would increase due to corona noise from operation of the transmission lines and noise from other project components***

**N-3a Perform Operational Noise Study.**

**N-3b Incorporate noise reduction features with solar power plant design.**

**N-3c Verify proper solar power plant noise control.**

***Impact N-4: Routine inspection and maintenance activities would increase ambient noise levels***

Maintenance activities associated with the solar projects and associated facilities would include primarily ground-level inspections and washing of the mirrors. Depending on the number of mirrors located at each solar project, a portion of these mirrors may undergo washing on a daily or weekly basis. Both ground level inspections and washing of the mirrors would involve vehicle travel to the mirror locations within the project sites. Access road repair may also involve occasionally increased noise from sources like a water truck or earthmoving equipment. These maintenance activities would periodically cause an increase in existing noise levels at noise-sensitive receptors.

There is no known mitigation strategy to reduce the severity of this impact.

## **3.9 Transportation and Traffic**

### **Methodology**

Due to the speculative nature of the solar renewable projects and the imprecise location of their boundaries, traffic studies were not carried out. Google Earth aerial photos were used to identify roads, railroads, and airports or landing strips within the solar renewable projects region. Traffic impacts presented in the subsequent section are general, as traffic levels have not been recorded along the project sites. Existing traffic studies would be carried out prior to individual project implementation.

### **Environmental Setting**

The only regional route in this area is I-10, which is under the jurisdiction of Caltrans. All of the other roadways in the affected area are under the jurisdiction of Riverside County and are largely two-lane

roadways. The “Arizona and California Railroad (ARZC) is a RailAmerica short line property. The ARZC connects Cadiz, California with Matthie, Arizona where it meets up with a BNSF railroad connecting with Phoenix, Arizona. The ARZC has a 50 mile branch line from Rice that passes through Blythe and would be located within one of the solar facilities northwest of Blythe. The ARZC transports petroleum gasses, steel, and lumber (RailAmerica, 2008). Two small airports, the Desert Center Airport and the Julian Hinds Private Airstrip, are located near the solar projects. The Desert Center Airport (FAA Identifier L64) is located approximately 1.15 miles north of a solar site and approximately two miles south of a solar site. The Julian Hinds Private Airstrip is located approximately 3 miles west of the solar facilities region. The Blythe Airport is located approximately 2.25 miles north of a solar energy facility and approximately three miles south of a solar energy facility. The Palo Verde Valley Transit Agency operates a commuter bus service (Expresso) along I-10 and Wiley’s Well Road between the City of Blythe and Chuckwalla Valley and Ironwood State Prisons. In addition, Greyhound bus lines use I-10 in this area for routes from the cities of Phoenix and Quartzsite, to the cities of Indio, San Bernardino, and Los Angeles (Greyhound, 2008).

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact T-1: Construction would cause temporary road and lane closures that would temporarily disrupt traffic flow***

Due to the speculative nature of the solar renewable projects and the imprecise location of their boundaries, the precise location of their transmission interconnections is not known. However, the transmission interconnection in the region may require a crossing of I-10 and local roadways. In addition, delivery of large equipment and materials via truck may require temporary lane and road closures. Temporary lane and road closures of this nature would occur for only a few minutes at a time.

Prior to conducting work within or above a road ROW, an encroachment permit or similar authorization would be required by the applicable jurisdictional agency at locations where the construction activities would occur within or above the public road ROW. The specific requirements of the applicable transportation agency may include traffic safety measures at encroachment locations, including detouring all traffic off the roadway or implementing a controlled continuous traffic break while stringing operations are performed. Encroachment permits would also restrict road closures to off-peak periods to avoid excessive traffic congestion. Where necessary, the specific agency requirements would be included as stipulations in the required encroachment permits.

Mitigation measures commensurate with the following would reduce the severity of impacts.

#### ***Mitigation Measures for Impact T-1: Construction would cause temporary road and lane closures that would temporarily disrupt traffic flow***

**T-1a Restrict lane closures.**

**T-1b Prepare detour plans.**

**T-1c Obtain required permits.**

#### ***Impact T-2: Construction would temporarily disrupt the operation of emergency service providers***

Construction activities would interfere with emergency response by ambulance, fire, paramedic, and police vehicles if lane and/or road closures restricted their effectiveness. Roadway segments that would be most impacted would be two-lane roadways, such as Route 177 (Rice Road) on the western side of the

solar facilities region or Buck Boulevard on the eastern side of the solar facilities region, which provide one lane of travel per direction. On roadways with multiple lanes, the loss of a lane and the resulting increase in congestion could lengthen the response time for emergency vehicles to pass through the construction zone. Additionally, there is a possibility that emergency services would be needed at a location where access is temporarily blocked by the construction zone.

Mitigation measures commensurate with the following would reduce the severity of impacts because emergency service providers would be aware of any potential delays, lane closures, and/or roadway closures and would be able to develop alternative routes.

***Mitigation Measure for Impact T-2: Construction would temporarily disrupt the operation of emergency service providers***

**T-2a Coordinate with Emergency Service Providers.**

***Impact T-3: Construction would temporarily disrupt pedestrian and/or bicycle circulation and safety***

Because of the remote solar projects location, it is unlikely that pedestrian and bicycle circulation would be affected by construction of the project transmission line construction activities and no mitigation is recommended.

***Impact T-4: Construction vehicles and equipment would cause physical damage to roads in the project area***

Unexpected damage to roads by vehicles and equipment would occur from construction vehicles (overhead line trucks, crew trucks, concrete trucks, etc.) that would be entering and leaving roads within the project area.

Mitigation measures commensurate with the following would reduce the severity of impacts because all roadways would be repaired to their pre-construction conditions.

***Mitigation Measure for Impact T-4: Construction vehicles and equipment would cause physical damage to roads in the project area***

**T-4a Repair damaged roads.**

***Impact T-5: Construction activities would cause a temporary disruption to rail traffic or operations***

Construction activities would interfere with rail traffic if it requires a temporary closure of railroad ROW. The ARZC would traverse one of the solar facilities shown on the BLM geocommunicator. Trucks with large equipment would potentially have to cross the tracks.

Mitigation measures commensurate with the following would reduce the severity of impacts because encroachment and ROW permits which include safety measures would be obtained prior to construction.

***Mitigation Measure for Impact T-5: Construction activities would cause a temporary disruption to rail traffic or operations***

**T-5a Obtain railroad right-of-way permit.**

***Impact T-6: Construction would generate additional traffic on the regional and local roadways***

Construction of the project would temporarily increase traffic (project trip generation) on the regional and local roadways through construction worker commute trips, project equipment deliveries, and hauling materials such as support structures and poles, concrete, fill, and excavation spoils. Impacts related to the generation of construction traffic would be temporary.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measure for Impact T-6: Construction would generate additional traffic on the regional and local roadways***

**T-6a Prepare Construction Transportation Management Plan.**

**Operational Impacts**

The solar renewable projects would require on-going operations and maintenance. The transmission line associated with the facilities would need to be inspected and maintained. The energy facilities themselves would require staff to operate the facilities and to maintain and replace equipment as necessary. However, the staff at each facility would be small and, given the rural nature of the region, these operations would have a less than significant impact on traffic, circulation, and/or the level of service on nearby roadways. There would be limited increase of traffic on regional or local roadways nor would operation and maintenance significantly add to disruption of traffic flow.

## **3.10 Public Health and Safety – Contamination**

### **Methodology**

Due to the speculative nature of the solar renewable projects and the imprecise location of their boundaries, environmental database searches were not carried out. The State Water Resources Control Board GeoTracker was used to identify environmental data for regulated facilities within the solar renewable projects region. Public health and safety impacts presented in the subsequent section are general, as environmental database searches have not been conducted along the project sites. Environmental database searches studies would be carried out prior to individual project implementation.

### **Environmental Setting**

The solar generation project area is primarily undeveloped open desert land consisting primarily of flat to moderately sloping terrain with sparse scrub vegetation and numerous small washes and local arroyos. Based on the land uses present, in particular the lack of commercial, industrial, and agricultural uses, the affected area has a very low potential to encounter contaminated soil. A review of the GeoTracker website (SWRCB, 2008) identified several leaking underground tanks (LUSTs) or other hazardous material sites within the solar renewable region, primarily within or adjacent to the town of Desert Center and the City of Blythe. A military cleanup site is located at the Desert Center Airport that requires evaluation and funding by the Army Corps of Engineers and is considered idle until funding to begin site investigation is received (SWRCB, 2008).

## Environmental Impacts and Mitigation Measures

### Construction Impacts

***Impact P-1: Soil or groundwater contamination could result from accidental spill or release of hazardous materials due to improper handling and or storage of hazardous materials during construction activities***

During construction operations, hazardous materials such as vehicle fuels, oils, and other vehicle maintenance fluids would be used and stored in construction staging yards. Soil or groundwater contamination resulting from spills or leaks of hazardous materials during project construction would be a significant impact. Installation of the solar dishes would likely use hazardous materials such as gasoline, diesel fuel, oil, hydraulic fluid, lubricants paints, solvents, adhesives, and cleaning chemicals. Such materials used in construction activities, equipment, and vehicles can be released during construction. Spills and leaks of hazardous materials during construction activities could result in soil or groundwater contamination. Small spills or drips that may occur would easily be cleaned up, especially if identified quickly. However, larger spills or leaks, soil or groundwater contamination could also occur.

Mitigation measures commensurate with the following would reduce the severity of impacts should larger spills or leaks occur.

***Mitigation Measures for Impact P-1: Soil or groundwater contamination could result from accidental spill or release of hazardous materials due to improper handling and or storage of hazardous materials during construction activities***

- P-1a Implement Environmental Monitoring Program.**
- P-1b Maintain emergency spill supplies and equipment.**
- P-1c Personnel trained in proper use and safety procedures for the chemicals used.**
- P-1d Personnel trained in refueling of vehicles.**
- P-1e Preparation of environmental safety plans including spill prevention and response plan.**
- P-1f Applicant's and/or General Contractor environmental/health and safety personnel.**
- P-1g Proper storage and disposal of generated waste.**

***Impact P-2: Residual pesticides and/or herbicides could be encountered during grading or excavation on currently or historically farmed land***

Residual pesticide and herbicide contamination of the soil and/or groundwater may exist along portions of the solar renewable projects that are adjacent to existing or historically farmed land, specifically north and northeast of Desert Center which would pass through irrigated agriculture.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact P-2: Residual Pesticides and/or Herbicides could be encountered during grading or excavation on currently or historically farmed land***

- P-2a Test for residual pesticides/herbicides currently or historically used from farming.**
- P-2b Stop work if contamination is detected.**
- P-2c Cordon off contaminated areas.**
- P-2d Notification of regulatory agencies.**

***Impact P-3: Unanticipated preexisting soil and/or groundwater contamination could be encountered during excavation or grading***

Review of the GeoTracker website (SWRCB, 2008) indicates that there are environmentally contaminated sites or hazardous material sites within the town of Desert Center and within the city of Blythe. Although unanticipated contamination along the projects ROW is unlikely due to the undeveloped nature of the surrounding areas, there is a potential for unknown contamination to have occurred along and near area roads due to illegal dumping. Contamination from petroleum products (gasoline, oil, and diesel) is one of the most common types of unknown contamination encountered and is generally detectable by visual and olfactory observation.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact P-3: Unanticipated preexisting soil and/or groundwater contamination could be encountered during excavation or grading***

**P-2b Stop work if contamination is detected.**

**P-2c Cordon off contaminated areas.**

**P-2d Notification of regulatory agencies.**

**P-3a Appoint individuals with correct training for sampling, data review, and regulatory coordination.**

**P-3b Documentation of compliance with measures for encountering unknown contamination.**

**Operational Impacts**

***Impact P-4: Soil or groundwater contamination could result from accidental spill or release of hazardous materials during operation and maintenance***

Soil or groundwater contamination could result from accidental spill or release of hazardous materials during facility operations or during maintenance of the transmission line, towers, and other associated transmission components. This could result in exposure of the facility, maintenance workers, and the public to hazardous materials; and could result in contamination to soil and/or groundwater.

Additionally, some solar collection fields could require use of a synthetic oil as a heat transfer fluid (HTF) within the parabolic collection troughs and the solar boiler. The HTF is defined as a “Hazardous Chemical” by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and an “Environmental Hazardous Substance, Liquid, N.O.S.” as defined by the U.S. Department of Transportation. The HTF is regulated as a hazardous material by the State of California. HTF oil would be circulated within a vacuum sealed compartment; however, solar thermal parabolic trough plants in California have reported some leakages of the synthetic heat transfer fluid oil contained in the collector field to transport the heat from the collectors to the steam cycle plant. Leakages have been controlled by new interconnection elements (ball joints) and contaminated soil can be recovered by bacteriological decontamination. Research and development of the past years has led to various new systems that don’t need the synthetic oil any more, but directly use water and steam as heat transfer fluid.

Gasoline, diesel fuel, oil, and lubricants would also be required for vehicles during routine cleaning and maintenance activities. The most likely incidents involving these hazardous materials would be associated with minor spills or drips, but larger spills could also occur. Small spills and drips can be easily cleaned up, so impacts from these minor releases during construction are considered to result in less than significant health safety risks. Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact P-4: Soil or groundwater contamination would result from accidental spill or release of hazardous materials during operation and maintenance***

- P-1c Personnel trained in proper use and safety procedures for the chemicals used.**
- P-1e Preparation of environmental safety plans including spill prevention and response plan.**
- P-1g Proper storage and disposal of generated waste.**
- P-4a Include HTF in spill response plans and remediate contaminated soil.**
- H-5a Develop Hazardous Substance Control and Emergency Response Plan for project operation.**

***Impact P-5: Excavation or grading could result in mobilization of existing soil or groundwater contamination from known sites***

Several LUST sites are listed within the solar project region, primarily near Desert Center and the Blythe Airport. Many of the sites are listed as “case closed” or are listed, as with the Desert Center Airport, as requiring pollution characterization (SWRCB, 2008). The presence of known contaminated site near the solar projects results in a potential for contaminated soil and/or groundwater to have migrated to the project ROW and thus be encountered during construction. Additionally, routes that traverse commercial or industrial areas have an increased risk for future environmental contamination.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact P-5: Excavation or grading could result in mobilization of existing soil or groundwater contamination from known sites***

- P-1g Proper storage and disposal of generated waste.**
- P-5a Evaluate contaminated sites.**
- P-5b Investigate contaminated sites.**

## 3.11 Public Health and Safety – EMF

### Methodology

Because the sites of the solar projects are speculative, a detailed analysis of the existing EMF was not conducted. Because the transmission line interconnections sites and voltage are no known, only general information regarding EMF is presented below.

### Environmental Setting

#### Electric and Magnetic Fields

A substantial amount of research investigating both electric and magnetic fields has been conducted over the past several decades; however, much of the body of national and international research regarding EMF and public health risks remains contradictory or inconclusive. Section D.10.11.3 (Scientific Background and Regulations Applicable to EMF) of the DPV2 Final EIR/EIS discusses specific EMF research that has been conducted.

EMF levels in the project area would not change during construction of the solar generation projects and associated transmission lines, because the lines would not be energized during construction. When the transmission lines are energized, there would be some permanent increase in the level of EMFs in the existing environment. These effects are anticipated to be localized.

## Other Field-Related Concerns

Other public concerns related to electric power facilities, are both safety and nuisance issues, and include: radio/television/electronic equipment interference; induced currents and shock hazards; and potential effects on cardiac pacemakers. Each of these issues is described below.

### *Radio/Television/Electronic Equipment Interference*

Although corona can generate high frequency energy that may interfere with broadcast signals or electronic equipment, this is generally not a problem for transmission lines. The Institute of Electrical and Electronic Engineers (IEEE) has published a design guide (IEEE, 1971) that is used to limit conductor surface gradients so as to avoid electronic interference.

Gap discharges or arcs can also be a source of high frequency energy. Gap discharges occur when an arc forms across a gap in loose or worn line hardware. It is estimated that over 90 percent of interference problems for electric transmission lines are due to gap discharges. Line hardware is designed to be problem-free, but wind motion, corrosion, and other factors can create a gap discharge condition. When identified, gap discharges can be located and remedied by utilities.

Electric fields from power lines do not typically pose interference problems for electronic equipment in businesses since the equipment is shielded by buildings and walls. However, magnetic fields can penetrate buildings and walls thereby interacting with electronic equipment. Depending upon the sensitivity of equipment, the magnetic fields can interfere with equipment operation. Review of this phenomenon in regard to the sensitivity of electrical equipment identifies a number of thresholds for magnetic field interference. Interference with cathode ray tube (CRT) type computer monitors can be detected at magnetic field levels of 10 mG and above, while large screen or high-resolution CRT monitors can be susceptible to interference at levels as low as 5 mG. Other specialized equipment, such as medical equipment or testing equipment can be sensitive at levels below 5 mG. Equipment that may be susceptible to very low magnetic field strengths is typically installed in specialized and controlled environments, since even building wiring, lights, and other equipment can generate magnetic fields of 5 mG or higher.

The most common electronic equipment that can be susceptible to magnetic field interference is probably CRT type computer monitors. Magnetic field interference results in disturbances to the image displayed on the monitor, often described as screen distortion, “jitter,” or other visual defects. In most cases it is annoying, and at its worst, it can prevent use of the monitor. This type of interference is a recognized problem in the video monitor industry. As a result, there are manufacturers who specialize in monitor interference solutions and shielding equipment. Possible solutions to this problem include: relocation of the monitor, use of magnetic shield enclosures, software programs, and replacement of CRT monitors with liquid crystal displays that are not susceptible to magnetic field interference.

### *Induced Currents and Shock Hazards*

Power line fields can induce voltages and currents on conductive objects, such as metal roofs or buildings, fences, and vehicles. When a person or animal comes in contact with a conductive object a perceptible current or small electric shock may occur. These small electric shocks cause no physiological harm; however, they may present a nuisance.

### *Cardiac Pacemakers*

An area of concern related to electric fields from transmission lines has been the possibility of interference with cardiac pacemakers. There are two general types of pacemakers: asynchronous and synchronous. The asynchronous pacemaker pulses at a predetermined rate. It is generally immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker,

however, pulses only when its sensing circuitry determines that pacing is necessary. Interference from transmission line electric field may cause a spurious signal on the pacemaker's sensing circuitry. However, when these pacemakers detect a spurious signal, such as a 60 Hz signal, they are programmed to revert to an asynchronous or fixed pacing mode of operation, returning to synchronous operation within a specified time after the signal is no longer detected. Cardiovascular specialists do not consider prolonged asynchronous pacing a problem, since some pacemakers are designed to operate that way. Periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. So, while transmission line electric fields may interfere with the normal operation of some of the older model pacemakers, the result of the interference is generally not harmful, and is of short duration (EPRI, 1985 and 1979).

## Environmental Impacts and Mitigation Measures

### ***Impact PS-1: Transmission line operation causes radio and television interference***

Corona or gap discharges related to high frequency radio and television interference impacts are dependent upon several factors including the strength of broadcast signals and are anticipated to be very localized if it occurs. Individual sources of adverse radio/television interference impacts can be located and corrected on the power lines. Conversely, magnetic field interference with electronic equipment such as computer monitors can be corrected through the use of software, shielding or changes at the monitor location. Mitigation measures commensurate with the following would reduce the severity of impacts.

#### ***Mitigation Measures for Impact PS-1: Transmission line operation causes radio and television interference***

**PS-1a Limit the conductor surface electric gradient.**

**PS-1b Document and resolve electronic interference complaints.**

### ***Impact PS-2: Transmission line operation causes induced currents and shock hazards in joint use corridors***

Induced currents and voltages on conducting objects near the proposed transmission lines represent a potential significant impact that can be mitigated. These impacts do not pose a threat in the environment if the conducting objects are properly grounded. Mitigation measures commensurate with the following would reduce the severity of impacts.

#### ***Mitigation Measure for Impact PS-2: Transmission line operation causes induced currents and shock hazards in joint use corridors***

**PS-2a Implement grounding measures.**

### ***Impact PS-3: Electric fields can affect cardiac pacemakers***

The electric fields associated with the generation interconnection transmission lines associated with the solar renewable facilities may be of sufficient magnitude to impact operation of a few older model pacemakers resulting in them reverting to an asynchronous pacing. Cardiovascular specialists do not consider prolonged asynchronous pacing to be a problem; periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. Therefore, while the transmission line's electric field may impact operation of some older model pacemakers, the result of the interference is of short duration and is not considered significant or harmful. No mitigation measures are recommended.

***Impact PS-4: Project structures can be affected by wind and earthquakes***

**Wind.** Transmission line structures used to support overhead transmission lines must meet the requirements of the National Electrical Safety Code, which includes clearances, design, and loading requirements related to wind and weather conditions. Transmission support structures are designed to withstand different combinations of loading conditions including extreme winds. These design requirements include use of safety factors that consider the type of loading as well as the type of material used, e.g., wood, steel or concrete. Failures of transmission line support structures are rare, however they may occur as a result of extremely high loading conditions such as tornadoes, ice storms, or high winds.

**Earthquake.** Overhead transmission lines consist of a system of support structures and interconnecting wire that is inherently flexible. Industry experience has demonstrated that under earthquake conditions structure and member vibrations generally do not occur or cause design problems. Overhead transmission lines are designed for dynamic loading under variable wind conditions that generally exceed earthquake loads.

No mitigation measures are recommended.

***Impact PS-5: Transmission or substation facilities can suffer an outage***

Electric system security has been an increasing focus of utility attention over the past several years. Major substations and high-voltage transmission lines serving major metropolitan areas could be targets of terrorist acts. If a major transmission line were seriously damaged, the effects could include (a) injury to onsite utility personnel, and/or (b) power outages in areas served by the facilities. As is common practice when a line is out of service, the utility would have to re-route power around the affected substation or transmission line to serve load, and an outage could occur for some period of time while the system was modified to provide electric service from other substations.

The solar renewable projects would generate up to an estimated 11,000 MW of power. However, because solar is an intermittent resource, it would not be a part of the baseload generation relied upon by SCE for reliability. The regional transmission system is interconnected in such a way that it is not possible that a single project or line outage would cause an outage at a specific hospital, airport, security facility, etc. Major facilities would also have back-up generators to prevent electricity interruptions in the event of an outage, such as would occur with a terrorist attack on a transmission line. Therefore, this impact is not considered to be substantial, and no mitigation is recommended.

**Table 3.12-1. Monthly Average Temperatures and Precipitation**

Month	Blythe, California		
	Temperature, °F		Precip. (inches)
	Max	Min	
January	68	37	0.50
February	73	42	0.45
March	79	46	0.35
April	87	53	0.12
May	96	60	0.03
June	104	67	0.05
July	108	76	0.20
August	107	75	0.63
September	102	67	0.40
October	91	55	0.27
November	77	43	0.27
December	68	38	0.56

Source: Western Regional Climate Center, 2008.  
Note: Period of record: 1/1/1913 to 12/31/2007.

## 3.12 Air Quality

### Methodology

State and federal databases were used to identify air quality standards for the Mojave Desert Air Basin (MDAB). Air quality impacts presented in the subsequent section are general, as specific construction and operational impacts would be based on the type of solar technology used and the required

maintenance for each solar project. Air quality modeling would be carried out prior to individual project implementation.

## Environmental Setting

### Meteorological Conditions

The climate of and southeastern California is characterized by hot, dry summers and mild to cold winters. Precipitation totals are low. As shown in Table 3.12-1, average summer (June-August) high and low temperatures in the study area, represented are 107°F and 74°F, respectively. Average winter (December-February) high and low temperatures in the study area are 69°F and 41°F. The average annual precipitation is 3.98 inches. There is a noted reduction in precipitation from April through June.

### Existing Air Quality

**Attainment Status.** The United States Environmental Protection Agency (U.S. EPA), California Air Resources Board (CARB), and the local air districts classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data shows compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The relevant National and California Ambient Air Quality Standards (NAAQS and CAAQS, respectively) are provided in Table 3.12-2.

The solar project area would be located in the Mojave Desert Air Basin (MDAB) partially under the jurisdiction of South Coast Air Quality Management District (SCAQMD) and partially under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD).

**Table 3.12-2. National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	National Standards	California Standards
Ozone (O <sub>3</sub> )	1-hour	—	0.09 ppm
	8-hour	0.08 ppm	0.070 ppm
Respirable particulate matter (PM <sub>10</sub> )	24-hour	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
	Annual mean	—	20 µg/m <sup>3</sup>
Fine particulate matter (PM <sub>2.5</sub> )	24-hour	35 µg/m <sup>3</sup>	—
	Annual mean	15 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>
Carbon monoxide (CO)	1-hour	35 ppm	20 ppm
	8-hour	9.0 ppm	9.0 ppm
Nitrogen dioxide (NO <sub>2</sub> )	1-hour	—	0.18 ppm
	Annual mean	0.053 ppm	—
Sulfur dioxide (SO <sub>2</sub> )	1-hour	—	0.25 ppm
	24-hour	0.14 ppm	0.04 ppm
	Annual mean	0.03 ppm	—

Notes: ppm=parts per million; µg/m<sup>3</sup>= micrograms per cubic meter; "—" = no standard  
Source: CARB Ambient Air Quality Standards Table, 2008.

**Table 3.12-3. Attainment Status for Each Local Air Quality Jurisdiction**

Pollutant	Attainment Status – Mojave Desert Air Basin		
	Federal	State	
		MDAQMD	SCAQMD
Ozone – 1 Hr	Unclassified/ Attainment	Non- attainment	Extreme Non- attainment
Ozone – 8 Hr	Unclassified/ NonAttainment	Not Available <sup>b</sup>	Not Available <sup>b</sup>
CO	Unclassified/ Attainment	Attainment	Attainment
NO <sub>2</sub>	Attainment	Attainment	Attainment
SO <sub>2</sub>	Attainment	Attainment	Attainment
PM10	Nonattainment	Non- attainment	Non- attainment
PM2.5	Nonattainment	Unclassified	Unclassified

Source: CARB, 2008a; U.S. EPA, 2008

- a. "Severe-17 Nonattainment" requires the district to attain the ozone standard within 17 years (2021).
- b. The attainment status of the California 8-hour ozone standards, promulgated in 2005, have not yet been determined.
- c. "Serious Nonattainment" for 8-hour ozone requires the district to attain the ozone standard within 9 years (2013).
- d. Arizona has no separate State ambient air quality standards.
- e. The Proposed Project and/or alternatives extend within this nonattainment area.
- f. The Proposed Project and alternatives do not extend to this nonattainment area.

Table 3.12-3 summarizes the federal and California State attainment status of the criteria pollutants for the local air quality jurisdiction.

**Air Pollutant Concentrations.** The Mojave Desert Air Basin exceeds the State 1-hour and 8-hour ozone standards and the State 24-hour PM10 standard. However, there has been an overall gradual downward trend for the maximum ozone concentrations.

**Ozone.** In the presence of ultraviolet radiation, both NO<sub>x</sub> and volatile organic compounds (VOCs) go through a number of complex chemical reactions to form ozone. Table 3.12-4 summarizes the best representative ambient ozone data for the project area collected over the past five years from monitoring stations in the project area. The table includes the maximum hourly concentration and the number of days above the National and State standards, as applicable. As indicated in this table, ozone formation is generally higher in spring and summer and lower in the winter.

Table 3.12-4. Ozone Air Quality Summary 1995-2007

Year	Days Above NAAQS 1-Hr	Days Above CAAQS 1-Hr	Month of Maximum 1-Hr Avg	Maximum 1-Hr Avg (ppm)	Days Above NAAQS 8-Hr	Month of Maximum 8-Hr Avg	Maximum 8-Hr Avg (ppm)
<b>Joshua Tree National Monument (Mojave Desert Air Basin)</b>							
2000	1	36	JUN	0.127	27	JUN	0.103
2001	0	3	JUN	0.106	1	SEP	0.088
2002	3	38	AUG	0.133	33	JUN	0.114
2003	9	41	AUG	0.140	39	AUG	0.119
2004	3	35	JUN	0.137	31	JUN	0.107
2005	2	38	JUL	0.131	59	JUN	0.112
2006	1	37	JUN	0.125	66	JUN	0.105
2007	1	37	JUL	0.129	81	AUG	0.106

Source: CARB, 2002; CARB, 2008b; U.S. EPA, 2005a.

National Ambient Air Quality Standard (NAAQS): 1-hr, 0.12 ppm; 8-hr, 0.08 ppm

California Ambient Air Quality Standard (CAAQS): 1-hr, 0.09 ppm

**Carbon Monoxide.** Carbon monoxide (CO) is generally found in high concentrations only near a significant source of emissions (i.e., freeway, busy intersection, etc.). The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. Vehicle traffic in urban areas is the major contributor to CO concentrations, and the solar renewable projects region would be expected to have low CO levels due to the remoteness of the area.

**Nitrogen Dioxide.** Oxides of nitrogen (NO<sub>x</sub>) are emitted from combustion sources in urban areas and converted to nitrogen dioxide smog in combination with ozone. The solar renewable projects region would be expected to have low NO<sub>2</sub> levels due to the remoteness of the area.

**Inhalable Particulate Matter.** Inhalable particulate matter (PM<sub>10</sub>) can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NO<sub>x</sub>, SO<sub>x</sub>, VOC, and ammonia, given the right meteorological conditions, can form particulate matter in the form of nitrates, sulfates, and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but are formed through complex chemical reactions in the atmosphere. Representative PM<sub>10</sub> monitoring data does not exist within the MDAB.

**Fine Particulate Matter.** Fine particulate matter (PM<sub>2.5</sub>) monitoring data does not exist within the MDAB.

**Sulfur Dioxide.** Sulfur dioxide (SO<sub>2</sub>) is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO<sub>2</sub> emissions when combusted. By contrast, fuels high in sulfur content such as coal or heavy fuel oils can emit very large amounts of SO<sub>2</sub> when combusted. Sources of SO<sub>2</sub> emissions come from every economic sector and include a wide variety of fuels, gaseous, liquid, and solid. The solar renewable projects region would be expected to have low SO<sub>2</sub> levels due to the remoteness of the area.

**Greenhouse Gases.** Greenhouse gases (GHG) that contribute to global climate change are carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride

(SF<sub>6</sub>). In response to Executive Order S-3-05 (June 2005), which declared California’s particular vulnerability to climate change, the California Global Warming Solutions Act of 2006, Assembly Bill 32 (AB32), was signed into effect on September 27, 2006. In passing the bill, the California Legislature found that:

*“Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems”* (California Health & Safety Code, Sec. 38500, Division 25.5, Part 1).

Emissions of CO<sub>2</sub> occur largely from combustion of fossil fuels. The major categories of fossil fuel combustion CO<sub>2</sub> sources can be broken into sectors for residential, commercial, industrial, transportation, and electricity generation. The transportation sector includes all motor gasoline and diesel fuel combustion, and the GHG emissions of this sector are not split into activities or uses (i.e., there is no separate estimate for the level of GHG emissions caused by gasoline or diesel fuel combustion-related to statewide construction activities). Other GHG emissions such as methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) are also tracked by State inventories but occur in much smaller quantities. The global warming potential of methane is about 21 times that of CO<sub>2</sub>. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO<sub>2</sub> emission rate (CO<sub>2</sub> Eq.).

California’s greenhouse gas emissions are large in a world-scale context and growing over time (CEC, 2007). The State is responsible for approximately 500 million metric tons of CO<sub>2</sub> equivalent (MMTCO<sub>2</sub> Eq.) or more than one percent of the 49,000 MMTCO<sub>2</sub> Eq. emitted globally (IPCC, 2007). Electricity generation within California is responsible for about 50 million metric tons of CO<sub>2</sub> (depending on yearly variations) or 15 percent of the total statewide CO<sub>2</sub> emissions and about one percent of statewide methane emissions. Electricity generation in other states delivered to California over high-voltage transmission lines also causes a substantial quantity of GHG emissions, about 10 percent more than the amount from in-state electricity generation. The use of sulfur hexafluoride (SF<sub>6</sub>) in power transformers and circuit breakers at power plants and along transmission lines also poses a concern, because this pollutant can slowly escape from the equipment, and it has an extremely high global warming potential (the global warming potential of one ton of SF<sub>6</sub> is equivalent to approximately 23,900 tons of CO<sub>2</sub>).

Statewide emissions of greenhouse gases from relevant source categories in 1990 and later years are summarized in Table 3.12-5.

**Table 3.12-5. California Greenhouse Gas Emissions (million metric tons CO<sub>2</sub> Eq.)**

Emission Inventory Category	1990	2000	2001	2002	2003	2004	2005
Residential Fuel Combustion (CO <sub>2</sub> )	29.7	30.25	27.21	27.32	26.40	27.86	—
Commercial Fuel Combustion (CO <sub>2</sub> )	14.4	15.63	12.04	17.84	15.06	12.1	—
Industrial Fuel Combustion (CO <sub>2</sub> )	103.0	76.17	80.48	71.53	65.47	67.1	—
Transportation Fuel Combustion (CO <sub>2</sub> )	150.7	181.68	182.49	190.19	180.64	187.95	—
Electricity Generation, In-State (CO <sub>2</sub> )	49.0	55.87	61.35	47.78	45.92	55.10	49.0
Elec. Generation Subtotal, Natural Gas (CO <sub>2</sub> )	—	49.71	55.48	41.98	40.56	48.94	43.0
Elec. Generation Subtotal, Coal (CO <sub>2</sub> )	—	2.26	2.13	2.39	2.17	2.58	2.2
Elec. Generation Subtotal, Petroleum (CO <sub>2</sub> )	—	3.90	3.74	3.41	3.20	3.59	3.7
Methane (all CH <sub>4</sub> shown as CO <sub>2</sub> Eq.)	—	26.32	26.62	27.07	27.49	27.80	—
Nitrous Oxide (all N <sub>2</sub> O shown as CO <sub>2</sub> Eq.)	—	31.43	30.76	34.48	33.85	33.34	—
Electricity Transmission and Distribution (SF <sub>6</sub> shown as CO <sub>2</sub> Eq.)	2.6	1.14	1.10	1.04	1.01	1.02	—
<b>Total California Greenhouse Gas Emissions without Electricity Imports</b>	<b>371.7</b>	<b>440.47</b>	<b>446.35</b>	<b>444.86</b>	<b>423.20</b>	<b>439.19</b>	<b>—</b>
Electricity Imports (CO <sub>2</sub> Eq.)	61.6	40.48	47.37	51.73	56.44	60.81	—
<b>Total California Greenhouse Gas Emissions with Electricity Imports</b>	<b>433.29</b>	<b>480.94</b>	<b>493.72</b>	<b>496.59</b>	<b>479.64</b>	<b>500.00</b>	<b>—</b>

Source: CARB, 2007 for 1990 and California Energy Commission, 2007 for all other years. (Totals include source categories not shown. CEC data reflect changes in memo from CEC to CARB dated January 23, 2007.) “—” means subtotal not provided in this format by citation.

## Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time. The solar renewable projects and associated transmission lines would be located in generally undeveloped areas where only a few rural residences have been identified.

## Environmental Impacts and Mitigation Measures

### Construction Impacts

***Impact AQ-1: Construction would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants***

Construction of solar projects and associated linears would generate dust and exhaust emissions with crews operating off-road equipment and on-road mobile sources, from heavy-duty diesel and gasoline-powered construction equipment and fugitive particulate matter (dust) from travel on unpaved surfaces. Beyond the boundaries of the solar projects, exhaust emissions would also be caused by workers commuting to and from the project sites, from trucks hauling equipment and supplies to the construction sites, dump trucks hauling away dirt or vegetation debris, and trucks delivering fresh concrete. Diesel-fired portable engines and equipment would likely be used to provide temporary power during construction. Concrete batch plants, standby and portable generators, compressors, and water pumps are examples of equipment that would be powered by portable engines.

Toxic air contaminants and odors would be emitted as a result of fuel combustion in construction-related equipment and vehicles, but construction would involve many small sources of toxics or odors rather than individual large sources. Construction emissions would occur over a number of years, but would be distributed over a large area and would not affect a substantial number of people.

Because the solar renewable projects would be located on federal land, they would require federal approval. Riverside County NO<sub>x</sub> and/or PM<sub>10</sub> reductions may be needed to offset the construction-phase emissions, but the ultimate level of additional mitigation should be based on a refined estimate of construction-phase emissions, depending on the ultimate engineering, design, and phasing of the projects which would be determined on a case by case basis for the individual project level analysis.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact AQ-1: Construction would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants***

**AQ-1a Suppress dust at all work or staging areas and on public roads.**

**AQ-1b Use low-emission construction equipment.**

**AQ-1c Implement dust reduction measures.**

**AQ-1d Prevent transport of mud and dust.**

**AQ-1e Encourage carpooling.**

**AQ-1f Minimize vehicle idling.**

**AQ-1g Obtain NO<sub>x</sub> and particulate matter emission offsets.**

***Impact AQ-2: Project activities would cause a net increase of greenhouse gas emissions***

Developing the solar facilities would cause GHG emissions during construction that would be offset by the indirect net decrease in CO<sub>2</sub> emissions from power plants described in Impact AQ-3. Greenhouse gas emissions that would occur as a result of construction activities would be above the level of GHGs that occur in the baseline conditions. GHG emissions from the construction activities can be estimated based on the expected fuel use of equipment and vehicles needed for construction. The following GHGs would occur: CO<sub>2</sub> emissions from fuel combustion due to equipment and vehicle use; methane (CH<sub>4</sub>) and nitrous oxides (N<sub>2</sub>O) from fuel combustion.

Construction-phase GHG emissions could be minimized by using fuel-efficient construction equipment, conserving fuel, and minimizing individual commuter trips. The following recommended mitigation measures that would encourage carpooling, minimize vehicle idling, and require use of low-emission construction equipment would provide GHG reductions during construction. To address the construction-phase emissions, Mitigation Measure AQ-2a would require generators to enter a carbon credit trading market and secure credits for the construction GHG emissions. However carbon credit trading markets are not fully formed or regulated, and the relationship of credits to real GHG reductions is not uniformly enforceable. Carbon credits could be created by power plant operators that curtail operation as a result of the new solar generation. However, individual applicants would need to obtain such credits through a trading program, and such reductions would not be contemporaneous with construction-phase emissions. Regardless, as discussed below under Operational Impacts, construction-phase emissions would eventually be offset by the GHG emissions that would be avoided by generating solar power.

***Mitigation Measure for Impact AQ-2: Project activities would cause a net increase of greenhouse gas emissions***

**AQ-1b Use low-emission construction equipment.**

**AQ-1e Encourage carpooling.**

**AQ-1f Minimize vehicle idling.**

**AQ-2a Offset construction-phase greenhouse gas emissions with carbon credits.**

**Operational Impacts**

***Impact AQ-2: Project activities would cause a net increase of greenhouse gas emissions***

Operational-phase GHG emissions would also occur with routine maintenance and inspections of the solar collectors and transmission line and with direct fugitive emissions of sulfur hexafluoride (SF<sub>6</sub>) as part of the electrical switchgear. In advance of GHG regulations, SCE is taking voluntary steps to address this issue of direct fugitive SF<sub>6</sub> emissions from transmission system operation through the U.S. EPA SF<sub>6</sub> Emissions Reduction Partnership for Electric Power Systems.<sup>4</sup> Overall, the construction-phase and routine operational-phase emissions including SF<sub>6</sub> fugitives would eventually be offset by the GHG emissions that would be avoided by generating solar power, which would reduce emissions from fossil-fueled power plants.

***Impact AQ-3: Operation, maintenance, and inspections would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants***

Dust and exhaust emissions would be generated during operation, maintenance, and inspection activities of the solar projects and associated transmission lines. Operation, maintenance, and inspection of the generation facilities would cause travel on the gravel access roads. Emissions would result from the solar projects maintenance activities, including mirror cleaning and undesired vegetation removal, in addition to testing of any emergency generators and firewater pumps. Diesel-powered or gasoline-powered vehicles may need to be used to pull water tanks to clean the mirrors and provide facility maintenance. Because of the large number of mirrors to be washed, the vehicles may need to be used on a daily basis and may contribute to ozone precursors and PM10 emissions.

Mitigation measures commensurate with the following would reduce the severity of impacts.

***Mitigation Measures for Impact AQ-3: Operation, maintenance, and inspections would generate dust and exhaust emissions of criteria pollutants and toxic air contaminants***

**AQ-3a Use low emission vehicles for facility maintenance and operation.**

**AQ-3b Provide a site dust control plan.**

***Impact AQ-4: Power generated by project operation would cause reduced emissions from existing power plants***

The solar power facilities and associated transmission line would facilitate decreased operation of power plants that would otherwise be used to deliver energy to the DPV2 line, which could lead to reduced emissions from fossil fuel-fired power plants. Demand for electricity would not change as a result of the solar development, and power generated in response to the demand would occur regardless of whether the renewable projects move forward. The solar development and associated transmission lines would enable reductions of CO<sub>2</sub> and other pollutant emissions that would otherwise occur from fossil fuel-fired power plants. The solar facilities could generate electricity without directly burning carbon-based fuels and would thus generate essentially no greenhouse gases per megawatt-hour of output. This would lead to reduced emissions from fossil fuel-fired power plants.

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<sup>4</sup> See <http://www.epa.gov/electricpower-sf6/partner.html>.

## 3.13 Water Resources

### Methodology

State and federal databases were used to identify water crossings and groundwater aquifers within the solar projects region. Water quality and erosion impacts presented in the subsequent section are general, as specific construction and operational impacts would be based on the type of engineering design and surface water and groundwater basin beneath each of the solar projects. Specific water quality and erosion impacts would be studied prior to individual project implementation.

### Environmental Setting

There are numerous surface water crossings, all of which may be classified as having the characteristics of alluvial fan washes, meaning the actual number of drainage crossings is much higher than those that are named.

Much of the solar generation project area is underlain by basin fill groundwater aquifers contained in unconsolidated alluvial deposits of Pliocene through Holocene age. The basin fill receives most of its groundwater recharge through the coarse sediments deposited in the alluvial fans. The aquifers are typically beneath the valleys that are separated by the desert mountains. With the exception of the area in the immediate vicinity to the Colorado River, where groundwater is approximately 10 feet below the ground surface, groundwater in the project area is typically 100 to 250 feet below the ground surface. Water enters these aquifers mainly through streambeds where the water table is lower than the water level in the stream (USGS, 2008).

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact H-1: Construction activity could degrade water quality due to erosion and sedimentation***

Construction of the solar renewable projects will occur over a vast area of up to approximately 127,500 acres. Because of the nature of solar technologies, which tend to consist of large solar collectors bolstered by a post with a small footprint, installation of the solar collection or concentration devices is anticipated to produce relatively little effect on erosion and sedimentation. However, some of the solar collection devices may be located in or adjacent to ephemeral watercourses. Grading for many miles of permanent access roads is expected to cross many ephemeral watercourses. Construction would disturb the ground surface, which could lead to an increased potential for erosion and sedimentation. Downstream beneficial uses for surface water could be adversely affected through violation of RWQCB water quality objectives for suspended solids, total dissolved solids, sediment and turbidity. Because ephemeral watercourses rarely contain water (average annual rainfall is approximately 4 inches), it is unlikely that site development would lead to significant sedimentation.

Because the solar renewable projects are more than one acre in size, they will be required to comply with the California General Permit for Discharges of Storm Water Associated with Construction Activity. Compliance will require preparation of and adherence to a SWPPP describing Best Management Practices to protect stormwater quality during construction. BMPs may include silt fencing, straw mulch, straw bale check dams, erosion control blankets, matting, and other fabrics. In addition to these protections, mitigation measures commensurate with the following would further reduce the severity of impacts.

***Mitigation Measures for Impact H-1: Construction activity could degrade water quality due to erosion and sedimentation***

- H-1a Minimize construction and maintenance disturbance to riparian areas.**
- H-1b Avoid watercourses to the maximum extent possible.**
- H-1c Identify and mark sensitive areas for avoidance.**
- H-1d Develop and implement construction Best Management Practices.**
- H-1e Stream crossings at low flow periods.**
- H-1f Compliance with NPDES regulations.**
- H-1g Construction routes to avoid and minimize disturbance to stream channels.**

***Impact H-2: Construction activity could degrade water quality through spills of potentially harmful materials***

Construction of the solar renewable facilities and associated transmission lines would involve the use of heavy, motorized equipment, including 4x4 pickups, fuel trucks, cranes, dozers, forklifts, and concrete trucks. This equipment requires job-site replenishment of hazardous chemicals in the form of fuels, oils, grease, coolants, and other fluids. The accidental spill of these, or other construction-related materials could lead to the discharge of contaminants into surface waters during a storm event, or discharged contaminants could infiltrate into the soil and groundwater below. Groundwater or downstream surface water beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents.

Nonetheless, water contamination is unlikely as a result of hazardous materials spills. Streams are dry most of the time, meaning spills are not likely to go into surface water. Groundwater is generally deep enough (250 feet) that direct disturbance during construction should not occur. Mitigation measures commensurate with the following would reduce the severity of any impacts to water quality as a result of spills of hazardous materials.

***Mitigation Measures for Impact H-2: Construction activity could degrade water quality through spills of potentially harmful materials***

- H-1a Minimize construction and maintenance disturbance to riparian areas.**
- H-1b Avoid watercourses to the maximum extent possible.**
- H-1c Identify and mark sensitive areas for avoidance.**
- H-1d Develop and implement construction Best Management Practices.**
- H-1e Stream crossings at low flow periods.**
- H-1f Compliance with NPDES regulations.**
- H-1g Construction routes to avoid and minimize disturbance to stream channels.**
- H-2a Groundwater testing and treatment before disposal.**
- H-2b No storage of fuels and hazardous materials near sensitive water resources.**
- H-2c Proper disposal and clean-up of hazardous materials.**
- H-2d Maintain vehicles and equipment.**
- P-1a Implement Environmental Monitoring Plan.**
- P-1b Maintain emergency spill supplies and equipment.**

## Operational Impacts

### ***Impact H-3: Creation of new impervious areas could cause increased runoff resulting in flooding or increased erosion downstream***

Construction of access roads could result in runoff through creation of impervious areas and compaction of soils. Impervious areas and compacted soils generally have higher runoff coefficients than natural areas, and increased flood peaks are a common occurrence in developed areas. In the case of the solar renewable projects, there may be small local increases in runoff by this process, but the total area affected would be very small in comparison to the total watershed. Mitigation measures commensurate with the following would reduce the severity of any impacts.

### ***Mitigation Measure for Impact H-3: Creation of new impervious areas could cause increased runoff resulting in flooding or increased erosion downstream***

**H-3a Install solar power plant facility runoff control.**

### ***Impact H-4: Transmission towers or other aboveground project features located in a floodplain or watercourse could result in flooding, flood diversions, or erosion***

Transmission towers in the transmission line could be located in stream channels in areas that are subject to erosion. Should this occur, scour at the tower foundation could undermine the foundation and result in the collapse of the tower, increased erosion risk, and power outage. The risk of this impact occurring is minimal, since tower foundation depths, which could be as deep as 40 feet, are deeper than the expected depth of scour.

Within the solar project sites, it may not be possible to completely avoid watercourses with the solar technology because of the large number of mirrors, troughs, or dishes that would be required. However, foundations for the solar mirrors should be deeper than the scour depth, and site specific engineering should avoid large desert washes to avoid damage to the mirrors. Mitigation measures commensurate with the following would reduce the severity of any impacts.

### ***Mitigation Measures for Impact H-4: Transmission towers or other aboveground project features located in a floodplain or watercourse could result in flooding, flood diversions, or erosion***

**H-1a Minimize construction and maintenance disturbance to riparian areas.**

**H-4a Scour protection to include avoidance of bank erosion and effects to adjacent property.**

### ***Impact H-5: Accidental releases of contaminants from project facilities could degrade water quality***

Oil and other contaminants from dishes and maintenance equipment at the solar project sites could be released accidentally and contaminate local surface water or groundwater. Groundwater or downstream surface water beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents. Because the sites are located in the desert, they are dry for the majority of the time. Spills would likely be infrequent and small due to the fact that contaminants at the site will be stored in small concentrations. Mitigation measures commensurate with the following would reduce the severity of any impacts.

### ***Mitigation Measures for Impact H-5: Accidental releases of contaminants from project facilities could degrade water quality***

**H-2a Groundwater testing and treatment before disposal.**

**H-5a Develop Hazardous Substance Control and Emergency Response Plan for project operation.**

## 3.14 Geology, Mineral Resources, and Soils

### Methodology

State and federal databases were used to identify geological, soil, and mineral resources in the solar projects region. Impacts presented in the subsequent section are general, as specific construction and operational impacts would be based on soil surveys and other geological information specific to each of the solar projects. Specific soil and mineral surveys and geological tests would be studied prior to individual project implementation.

### Environmental Setting

#### Geology

The solar generation project area is within the Colorado Desert Province, which includes the Chuckwalla Valley and the mountainous region of the Colorado Desert. The solar projects would be located in the mountain valleys east of the Chuckwalla Mountains and south of the Palen/McCoy Mountains and west of the Big Maria Mountains. Geologic units within the solar projects region that may be affected include recent dune sand (Qs), Recent alluvium (Qal), nonmarine sedimentary deposits (Qc), granitic rocks (gr). Two other geologic units, granitic and metamorphic rocks (gr-m) and gneiss (pCg), may also be affected in excavations beneath shallow layers of Qal and Qc.

#### Soils

Numerous soils associations are located in the solar generation project area, such as the Aco-Rositas-Carrizo (CA654), Rositas-Carsitas-Dune Land (CA921), Cherioni-Hyder-Cipriano (CA928), and Gunsight-Rillito-Chuckwalla (CA927).

Corrosion potential to uncoated steel for these soils is high. Additionally most of the soil associations have low to moderate corrosion potential to concrete, except CA928 which has low potential. Expansion potential of these soil associations is highly variable with the following groupings: low potential for CA927, and CA928; low to moderate potential for CA654; and low to high potential for CA921. Gunsight-Rillito-Chuckwalla (CA927) soils have local areas of desert pavement.

#### Mineral Resources

One mineral resource site was identified within the solar projects region, a gold mine on the Palo Verde Mesa that is no longer in operation. No other mineral resources are identified in the area. Eagle Mountain Mine, an iron ore mine that is no longer operating, is located approximately 5 miles northwest of the solar projects region near Joshua Tree National Park.

#### Seismicity

**Fault Rupture.** There are no known active faults in the solar generation project area.

**Groundshaking.** The San Andreas Fault Zone is located west of the affected area. The peak horizontal acceleration for most of the area is less than 0.4 g, and so it should not undergo strong groundshaking.

**Liquefaction.** The portion of the affected area primarily located within the Chuckwalla Valley and on the edges of several mountain ranges is underlain by Quaternary sediments and small areas of bedrock. Groundwater elevations in this region are very deep and are expected to be greater than 100 feet along most of the alignment, thus liquefaction is not likely even in the areas vulnerable to moderate groundshaking.

**Earthquake-Induced Landslides.** The solar projects would be located on flat to gently sloping alluvial fans, alluvial plains, and low-lying foothills that are not susceptible to landslides.

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact G-1: Erosion would be triggered or accelerated due to construction activities***

The solar facilities would be located on sites that are gently sloped to be economically feasible. Access roads between would likely be constructed at the solar facility sites and intermittent truck traffic on the roads would be expected associated with the maintenance process. The hazard of erosion for soils anticipated to occur at the site ranges from slight to moderate. Grading for access roads could loosen soil and accelerate erosion. Implementation of BMPs would minimize erosion. In addition, a Stormwater Pollution Prevention Plan (SWPPP) that would limit erosion from the construction site would be required in accordance with the State General Construction Permit and the Clean Water Act. Mitigation measures commensurate with the following would reduce the severity of any impacts. Mitigation measures commensurate with the following would reduce the severity of any impacts.

#### ***Mitigation Measures for Impact G-1: Erosion would be triggered or accelerated due to construction activities***

- G-1a Limit modification of access roads.**
- G-1b Implement erosion control procedures.**
- G-1c Restore surfaces for erosion control and revegetation.**

#### ***Impact G-2: Unique geologic features would be damaged due to construction activities***

Construction activities, such as grading and excavation for the solar projects, could cause damage to desert pavement. Desert pavement is a unique geologic/soil feature that takes thousands of years to form, and protects the underlying silty and sandy soils from excessive wind and water erosion. Damage to desert pavement could result in an extreme acceleration of erosion. One soil association that underlies the region, the Gunsight-Rillito-Chuckwalla (CA927), is known to include areas of desert pavement. Mitigation measures commensurate with the following would reduce the severity of any impacts.

#### ***Mitigation Measures for Impact G-2: Unique geologic features would be damaged due to construction activities***

- G-1a Limit modification of access roads.**
- G-1b Implement erosion control procedures.**
- G-2a Protect desert pavement.**

## Operational Impacts

### ***Impact G-3: Project would expose people or structures to potential substantial adverse effects as a result of problematic soils (Class II)***

Soils expected to occur at the site have a high potential to corrode steel and a low to moderate potential to corrode concrete. Corrosive subsurface soils may also exist at the site. Corrosive soils could have a detrimental effect on concrete and metals. Depending on the degree of corrosivity of subsurface soils, concrete and reinforcing steel in concrete structures and uncoated steel structures exposed to these soils could deteriorate, eventually leading to structural failures. Expansion potential for the soils expected to occur at the site ranges from low to high. Expansive soils can also cause problems to structures. Soils that exhibit shrink-swell behavior are clay rich and react to changes in moisture content by expanding or contracting. Expansive soils may cause differential and cyclical foundation movements that can cause damage and/or distress to structures and equipment. Damage to or collapse of project structures due to unsuitable soil conditions could have adverse impacts on the reliability of peak electrical supply and could expose people or structures to substantial adverse effects. Mitigation measures commensurate with the following would reduce the severity of any impacts.

### ***Mitigation Measures for Impact G-3: Project would expose people or structures to potential substantial adverse effects as a result of problematic soils***

**G-3a Conduct geotechnical studies for soils to assess characteristics and aid in appropriate foundation design.**

**G-3b Avoid structure placement in high shrink/swell areas.**

### ***Impact G-4: Project would expose people or structures to potential substantial adverse effects as a result of seismically induced groundshaking and/or ground failure***

Moderate groundshaking should be expected in the event of an earthquake on the faults near the solar projects region and associated transmission lines and from other major faults in the region, with estimated PGA of 0.4g. Project structures would be designed to withstand geologically induced stresses. Generally appropriate tower design for the transmission line towers would account for lateral wind loads and conductor loads would likely exceed any creditable seismic loading, minimizing potential damage to tower structures from groundshaking.

Moderate to strong groundshaking could result in liquefaction-related phenomena in sections of renewable facilities and transmission lines that cross active river washes and streams where lenses and pockets of loose sand may be present and may become saturated seasonally during large storms or a wet season. This could result in damage to project structures should a large earthquake occur during the periods when these soils are saturated. Seismically induced slope failures would not occur along this alternative due to its flat terrain. Mitigation measures commensurate with the following would reduce the severity of any impacts.

### ***Mitigation Measures for Impact G-4: Project would expose people or structures to potential substantial adverse effects as a result of seismically induced groundshaking and/or ground failure***

**G-4a Reduce effects of groundshaking.**

**G-4b Conduct geotechnical investigations for liquefaction.**

**G-4c Place structures in stable areas.**

### 3.15 Socioeconomics, Services, and Utilities

#### Methodology

State and federal databases were used to identify the socioeconomic resources in the solar projects region. Impacts presented in the subsequent section are general, as specific construction and operational personnel and utilities requirements would be based on the specific solar technology being implemented. Specific socioeconomic data would be studied and analyzed prior to individual project implementation.

#### Environmental Setting

The solar projects would be located within unincorporated Riverside County, California. Tables 3.15-1 and 3.15-2 describe the population, housing, employment, public services, and utilities characteristics in Riverside County, the City of Blythe, and Desert Center.

**Table 3.15-1. Demographic Characteristics for the Solar Generation Project Area**

Location	2005-2007 Estimated Population	2005-2007 Estimated Housing	2005-2007 Estimated Employment
Riverside County (CA)	2,002,663	729,148 Vacancy Rate 12.7% (92,393 units)	935,111 13.1% in Construction Trades (112,913)
City of Blythe (Riverside Co, CA)	21,125	5,572 Vacancy Rate 15.4% (860 units)	4,992 9.7% in Construction Trades (439)
Desert Center (Riverside Co, CA) <sup>1</sup>	962	630 Vacancy Rate 65.7% (414 units)	248 6.6% in Construction Trades (16)

<sup>1</sup> ACS Demographic Estimated (2005-2007) not available for Desert Center, data is from 2000 census

Source: U.S. Census Bureau 2000 Lookup, <http://factfinder.census.gov> accessed January 2, 2009.

**Table 3.15-2. Utility and Service Providers in the Solar Generation Project Area**

<b>Riverside County</b>	
Natural gas & electricity – SCE, Southwest Gas Corporation Water – Eastern Municipal Water District; residential wells (Palo Verde Valley); Palo Verde Irrigation District (for dust control) Wastewater – Eastern Municipal Water District Telecommunications – Verizon, SBC	Solid Waste (Landfills) – Riverside County Waste Management Department Fire protection – Riverside County Fire Department Police protection – Riverside County Sheriff’s Department Schools within One Mile of Proposed Project – None
<b>City of Blythe (Riverside County)</b>	
Natural gas & electricity – SCE, Southwest Gas Corporation Water – City of Blythe Wastewater – Blythe Regional Wastewater Authority Telecommunications – Verizon, SBC	Solid Waste (Landfills) – Blythe Sanitary Landfill Fire protection – Blythe Fire Department, Riverside County Fire Department Police protection – Blythe Police Department, Riverside County Sheriff’s Department Schools within One Mile of Proposed Project – None
<b>Desert Center (Riverside County)</b>	
Natural gas & electricity – SCE, Southern California Gas Water – Eastern Municipal Water District Wastewater – Eastern Municipal Water District Telecommunications – Verizon, SBC	Solid Waste (Landfills) – Desert Center Sanitary Landfill Fire protection – Riverside County Fire Department Police protection – Riverside County Sheriff’s Department Schools within One Mile of Proposed Project – None

Source: Eastern Municipal Water District, <http://www.emwd.org>  
Riverside County Sheriff’s Department, <http://www.riversidesheriff.org>  
Riverside County Fire Department, <http://www.rvcfire.org/opencms/opencms/index.html>  
City of Blythe, <http://www.cityofblythe.com>  
Desert Center Profile, <http://www.hometownlocator.com/City/Desert-Center-California.cfm>

## Environmental Impacts and Mitigation Measures

### Construction Impacts

#### ***Impact S-1: Project construction and/or transmission line presence would cause a change in revenue for businesses, tribes, or governments***

There are few businesses within the solar projects region other than near the town of Desert Center and on the outskirts of the City of Blythe. The existing commercial facilities would not likely be affected by the construction activities because there would be at least 1,000 feet distance between the facilities and the solar project sites. As such, there would be no impact to revenues related to business operations. However, employment of construction personnel for a number of years would be beneficial to local businesses and the regional economy through increased expenditure of wages for goods and services. Secondary job creation would also be realized in the local community retail centers. Personnel for construction would be drawn from local populations in Riverside County, creating new temporary and permanent employment. A limited number of construction personnel would require temporary housing, likely in local hotels, and would purchase food, beverages, and other commodities, which would provide economic benefit to the local economy. No mitigation would be necessary.

#### ***Impact S-2: Construction would disrupt the existing utility systems or cause a collocation accident***

Construction of the solar projects would not be within any roadways, thereby avoiding any utilities in roads. The projects are located primarily in open space on undeveloped BLM land. Some solar facilities would potentially traverse or be adjacent to cropland, but this would be a minimal amount due to the limited use of agriculture in the region so it would not likely disrupt any underground irrigation pipes. However, the transmission line would potentially parallel the Devers Palo Verde 1 (DPV 1) 500 kV corridor for some of their length. DPV 1 would bisect a portion of the solar project sites. In the event that the DPV 2 is constructed prior to some of the solar facilities, the transmission interconnections would also parallel DPV 2. In addition, the general boundaries of some of the solar sites include I-10 to the south, which could have buried utilities along its ROW.

As a result, there is the potential for an existing utility disruption in the event of an accident. Under Section 1, Chapter 3.1, “Protection of Underground Infrastructure,” Article 2 of California Government Code §§4216-4216.9, the developers of the solar facilities would be required to contact a regional notification center at least two days prior to excavation of any subsurface installation. This action would cause Underground Service Alert to notify the utilities that may have buried lines within 1,000 feet of the projects. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area. The location of all underground electric, water, gas, cable or telecommunications lines within the vicinity of the line and site would be marked. Notification and marking the locations of existing utilities would allow construction activities to avoid existing lines and would thereby minimize the potential for a co-location accident.

Mitigation measures commensurate with the following would reduce the severity of any impacts.

#### ***Mitigation Measure for Impact S-2: Construction would disrupt the existing utility systems or cause a co-location accident***

**S-2a Coordinate with utility providers.**

***Impact S-3: Project construction and operation would increase the need for public services and facilities***

**Water.** Water would be required during project construction for dust abatement and cleaning construction equipment. The amount of water required depends on the length of access roads used, weather conditions, road surface conditions, and other site-specific conditions. Dust suppression efforts would occur on each day that grading activities take place and when construction vehicles use unpaved access roads.

Water consumption for this purpose would also vary depending on the implementation of typical air quality mitigation measures that would require implementation of a Fugitive Dust Control Plan (see Section D.11, Air Quality) that may specify the use of soil binders on unpaved roads, staging areas, and parking areas, which would substantially minimize water use. Water would also be needed to make the concrete used during project construction and is often used to lubricate the auger during boring operations. Comparatively small amounts of potable water would be needed for sanitary and drinking purposes.

**Solid Waste.** Construction of a solar facility would generate waste largely in the form of soil from earthwork and transmission line construction would generate waste largely in the form of soil from tower foundation excavations. Some percentage of excavate would be clean and dry and would be “spread” along the ROW and/or solar sites. No existing structures would be removed. The closest landfills would be the:

- Desert Center Sanitary Landfill (17991 Kaiser Road) that allows a maximum permitted throughput of 60 tons/day and has a remaining capacity of 23,246 cubic yards; and
- Blythe Sanitary Landfill (1000 Midland Rd) that allows a maximum permitted throughput of 400 tons/day and has a remaining capacity of 2,289,139 cubic yards.

Due to the number and capacity of landfills serving the project area, capacity for materials generated from construction of the projects would be available. As the waste generated during construction would occur over an extended year period, the daily waste exported off site would be a fraction of the maximum daily throughput for any of the landfills above. Therefore, construction waste generated by the projects would not substantially affect the remaining capacities of local landfills to serve local demands.

**Public Services.** Because of the large available labor pool in Riverside County and nearby areas, few construction workers are expected to temporarily relocate to the area. Therefore, they would not generate additional population that would exceed the capacity of local public service providers. Nor would the projects result in any long-term requirements that would place a permanent increased demand on emergency service providers that would result in new or expanded facilities. Therefore, the temporary addition of construction personnel would not substantially increase any demands on schools or hospitals or lower the level of service for fire protection or police protection in the long-term and it would not require the construction or expansion of facilities or services.

**Emergency Services.** Project construction and associated equipment would potentially block roadways and impede emergency access through the area. Implementation of mitigation measures that would require the developer to coordinate construction schedules, lane closures, and other activities associated with installation of the solar plants and transmission line with emergency and police services would ensure minimal disruption to response times and access for these services.

Mitigation measures commensurate with the following would reduce the severity of any impacts.

***Mitigation Measures for Impact S-3: Project construction and operation would increase the need for public services and facilities***

**AQ-1a Implement Fugitive Dust Control Plan.**

**S-3a Recycle construction waste.**

**S-3b Use reclaimed water.**

**S-3c Coordinate construction schedule with emergency services.**

***Impact S-4: Labor force requirements would create a substantial demand for labor or a change in local employment***

Construction of the solar projects would employ a percent of Riverside County’s construction labor force during peak and off-peak construction. Construction of the transmission line interconnections may require additional workers. Although the projects would be located in an area with a low population, large local construction workforces are generally available in the region because of larger population centers in Riverside County. Local highways provide good access to the alignment from throughout the region and project sites are located in close proximity to Interstate 10. As such, although the project would take place several years to construct, most workers are not expected to relocate to the area permanently for construction. After construction, few workers are required for operation and maintenance (including periodic washing) of the solar facilities. The project would not adversely impact the local labor force and because the workers would primarily be drawn from local populations, any change in the labor force would benefit local employment. No mitigation would be required.

***Impact S-5: Construction workers would require housing that exceeds the supply of local housing or temporary housing facilities***

Several hundred construction and related jobs would potentially be required at the peak of construction. Remote areas of Riverside County near the solar projects region would lose access to temporary housing due to the influx of construction labor, if housing is required during construction. Most workers would likely stay in the Blythe area, which has an estimated population of 21,125 persons and has 860 vacant housing units (U.S. Census, 2000). Since workers would be drawn primarily from the local and surrounding population, it is not anticipated that project construction would create a burden on temporary housing resources, schools and hospitals, or public services and utilities. No mitigation would be required.

**Operational Impacts**

***Impact S-3: Project construction and operation would increase the need for public services and facilities***

During operation and maintenance, periodic washing of the mirrored surfaces of the solar facilities would be required. Because the solar projects are speculative, the exact amount of water required for washing of the mirrored surfaces and maintenance of the solar projects is unknown. Table 3.15-3 states the amount of water required for different solar technologies. Each solar project would be required to negotiate the purchase of its water.

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**Table 3.15-3. Water Required for Solar Technologies\***

Solar Technology	Average use of water (100 MWs)
Compact linear fresnel reflector	12.3 acre-ft/year
Solar power tower	18 acre-ft/year

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Solar trough	18 acre-ft/year
Solar photovoltaic	2-10 acre-ft/year

\* Water use assumes the use of dry-cooling; if wet-cooling were used, water would also be required for the cooling towers in amounts similar to conventional steam plants, approximately 600 acre-ft/year per 100 MW.  
Source: NRDC, 2008.

The Palo Verde Water District would have to determine if the solar projects water requirements would affect the ability to serve customer demands. In order to reduce adverse effects of the cumulative volume of water from all of the solar projects, mitigation similar to the following would be recommended for implementation to reduce water usage.

***Mitigation Measure for Impact S-3: Project construction and operation would increase the need for public services and facilities***

**S-3b Use reclaimed water.**

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# **Appendix A: Mitigation Measures**

## Appendix A. Mitigation Measures

Types of mitigation measures identified for the types of impacts for solar renewable generation projects.

### A.1 Biological Resources

**B-1a Provide restoration/compensation for affected sensitive vegetation communities.** Surface-disturbing components of the project shall be located in previously disturbed areas or where habitat quality is poor to the extent possible, and disturbance of vegetation and soils shall be minimized. Temporary construction mats may be used to minimize vegetation and soil disturbance only where deemed appropriate by the qualified biologist (see Mitigation Measure B-1c). The construction mats shall not be left on the ground for more than three weeks. Use of construction mats shall be considered a temporary impact to vegetation and shall be mitigated in accordance with this mitigation measure. If avoidance of sensitive vegetation communities is not feasible due, for example, to physical or safety constraints, the Applicant shall restore temporarily impacted areas to pre-construction conditions following construction (or emergency repairs) and shall permanently block off all public access to them, and/or shall purchase/dedicate suitable habitat for preservation to off-set permanently impacted areas. Restoration of some vegetation communities in temporarily impacted areas may not be possible if those areas are subject to vegetation management to maintain proper clearance between transmission lines and vegetation. In those instances, the mitigation shall consist of off-site acquisition and preservation of the vegetation community instead. Any area that can be preserved as intact or restored habitat, or if it contains any species (plant or animal) that require project-related compensatory mitigation will qualify as off-site mitigation lands. Restoration involves recontouring the land, replacing the topsoil (if it was collected), planting seed and/or container stock, and maintaining (i.e., weeding, replacement planting, supplemental watering, etc.) and monitoring the restored area for a period five years (or less if the restoration meets all success criteria). The success of the restoration is usually based on how the habitat compares with similar, nearby, undisturbed habitat. Any restoration efforts would be subject to a Habitat Restoration Plan approved by the Lead Agencies. Mitigation ratios and mitigation acreages for construction within authorized limits would need to be established prior to permitting the project. The mitigation ratios also apply to impacts from emergency repairs.

All limits of construction shall be delineated with orange construction fencing. The Applicant shall coordinate with the authorized officer for the applicable federal, State, or local land owner/administrator at least 60 days before construction in order to determine if gates shall be installed on access roads, especially trails that would be dually used as access roads, to prevent unauthorized vehicular access to the ROW. Gate installation shall be required at the discretion of the land management agency. On trails proposed for dual use as access roads, gates shall be wide enough to allow horses, bicycles, and pedestrians to pass through. The Applicant shall document its coordination efforts with the administering agency of the road/trail and provide this documentation to the Lead Agencies, and all affected jurisdictions 30 days prior to construction. Signs prohibiting unauthorized use of the access roads shall be posted on the installed gates. To control unauthorized use of project access roads by off-road vehicle enthusiasts, the Applicant shall provide funding to land management entities responsible for areas set aside for habitat conservation to provide for off-road vehicle enforcement patrols. The responsible land management entities will formulate what funding is reasonable to control unauthorized use of project access roads.

Any impacts associated with unauthorized activity (e.g., exceeding approved construction footprints) shall be mitigated at a 5:1 ratio. Restoration of the unauthorized impacts shall be credited at a 1:1 ratio (i.e., mitigated by in-place habitat restoration); the remaining 4:1 shall be acquired off site.

Areas to be restored shall include all areas temporarily impacted by construction, such as construction sites, laydown/staging areas, and temporary access and spur roads. Where on-site restoration is planned, the Applicant shall identify a qualified Habitat Restoration Specialist to be approved by the Lead Agencies and the Wildlife Agencies. The Habitat Restoration Specialist shall prepare and implement a Habitat Restoration Plan, for restoring temporarily impacted sensitive vegetation communities, to be approved by the Lead Agencies and Wildlife Agencies. The Applicant shall work with the Lead Agencies and Wildlife Agencies until a plan is approved by all. This Habitat Restoration Plan must be approved in writing by the Lead Agencies prior to the initiation of any vegetation disturbing activities. Hydroseeding, drill seeding, or an otherwise proven restoration technique shall be utilized on all disturbed surfaces using a locally endemic native seed mix approved by the Lead Agencies and Wildlife Agencies.

The Habitat Restoration Plan shall incorporate Desert Bioregion Revegetation/Restoration Guidance measures for restoration of temporary impacts to desert scrub and dune habitats. These measures generally include alleviating soil compaction, returning the surface to its original contour, pitting or imprinting the surface to allow small areas where seeds and rain water can be captured, planting seedlings that have acquired the necessary root mass to survive without watering, planting seedlings in the spring with herbivory cages, broadcasting locally collected seed immediately prior to the rainy season, and covering the seeds with mulch.

The restoration of habitat shall be maintained and monitored for five years after installation by an experienced, licensed Habitat Restoration Contractor, or until established success criteria identified in the Restoration Plan (specified percent cover of native and non-native species, species diversity, and species composition as compared with an undisturbed reference site) are met. Maintenance and monitoring shall be conducted following a prescribed schedule to assess progress and identify potential problems with the restoration. Remedial action (e.g., additional planting, weeding, erosion control, use of container stock, supplemental watering, etc.) shall be taken by an experienced, licensed Habitat Restoration Contractor during the maintenance and monitoring period if necessary to ensure the success of the restoration. If the restoration fails to meet the established success criteria after the maintenance and monitoring period, maintenance and monitoring shall extend beyond the five-year period until the criteria are met or unless otherwise approved by the Lead Agencies and the Wildlife Agencies. For areas where habitat restoration cannot meet mitigation requirements, as determined by the Habitat Restoration Specialist in coordination with Lead Agencies and the Wildlife Agencies, off-site purchase and dedication of habitat shall be provided at appropriate mitigation ratios or as otherwise required by the Wildlife Agencies.

**Tree Mitigation.** Mitigation for loss of native trees or native tree trimming shall be provided by (1) acquiring and preserving habitat within which the trees occur and/or (2) restoring (i.e., planting) trees on land that would not be subject to vegetation clearing (either in the Applicant's ROW and/or on land acquired and preserved). Any land to be used for this mitigation shall be approved by the Lead Agencies and the Wildlife Agencies.

For habitat acquisition and preservation, the mitigation ratios shall be established by the Lead Agencies and the Wildlife Agencies. For all trimmed native trees, the trees shall be monitored for a period of three years. If a trimmed tree declines or suffers mortality during that period, the tree shall be replaced in-kind (by species) at a 2:1 or 5:1 ratio as recommended by the CDFG (see below). If a tree does not decline or suffer mortality, no mitigation shall be required.

For restoration (planting trees), these guidelines, based on recommendations from the CDFG, shall be followed.

Native trees that are removed shall be replaced in-kind (by species) as follows.

- Trees less than five inches diameter at breast height (DBH) shall be replaced at 3:1
- Trees between five and 12 inches DBH shall be replaced at 5:1
- Trees between 12 and 36 inches shall be replaced at 10:1
- Trees greater than 36 inches shall be replaced at 20:1

Native trees that are trimmed shall be replaced in-kind (by species) as follows.

- Trees less than 12 inches DBH shall be replaced at 2:1
- Trees greater than 12 inches DBH shall be replaced at 5:1

All restoration shall be maintained and monitored for a minimum of 10 years. The restoration shall be directed according to a Habitat Restoration Plan approved by the Lead Agencies and the Wildlife Agencies.

**Mitigation Parcels/Habitat Management Plans.** All off-site mitigation parcels shall be approved by the Lead Agencies and Wildlife Agencies and must be acquired or their acquisition must be assured prior to the end of construction. To demonstrate that such parcels shall be acquired, the Applicant shall submit a Habitat Acquisition Plan at least 120 days prior to any ground disturbing activities. The Plan shall be submitted to the Lead Agencies and the Wildlife Agencies for review and approval, and shall include, but shall not be limited to: legal descriptions and maps of all parcels to be acquired; schedule that includes phasing relative to impacts; timing of conservation easement recording; initiation of habitat management activities relative to acquisition; and assurance mechanisms (e.g., performance bonds to assure adequate funding) for any parcels not actually acquired prior to vegetation disturbing activities.

A Habitat Management Plan shall be prepared by a biologist approved by the Lead Agencies and the Wildlife Agencies for all acquired off-site mitigation parcels. The Habitat Management Plan must be approved in writing by the Lead Agencies and the Wildlife Agencies prior to the initiation of any vegetation disturbing activities. The Applicant shall work with the Lead Agencies and Wildlife Agencies until a plan is approved by all. The Habitat Management Plan shall provide direction for the preservation and in-perpetuity management of all acquired, off-site mitigation parcels. The Habitat Management Plan shall include, but shall not be limited to:

- Legal descriptions of all mitigation parcels approved by the Lead Agencies and Wildlife Agencies
- Baseline biological data for all mitigation parcels
- Designation of a land management entity approved by the Lead Agencies and Wildlife Agencies to provide in-perpetuity management
- A Property Analysis Record prepared by the designated land management entity that explains the amount of funding required to implement the Habitat Management Plan
- Designation of responsible parties and their roles (e.g., provision of endowment by the Applicant to fund the Habitat Management Plan and implementation of the Habitat Management Plan by the designated land management entity)
- Management specifications including, but not limited to, regular biological surveys to compare with baseline; exotic, non-native species control; fence/sign replacement or repair,

public education; trash removal; and annual reports to the Lead Agencies and Wildlife Agencies.

**B-1b Conduct biological monitoring.** Monitoring shall be provided by a qualified biologist approved by the Lead Agencies and other agencies with jurisdiction over the project to ensure that all impacts occur within designated limits. Monitoring entails communicating with contractors, taking daily notes, and ensuring that the requirements of the APMs and mitigation measures are being met by being present during construction activities including all initial grubbing and clearing of vegetation. Additionally, a qualified biologist employed by the Applicant shall be present during maintenance involving ROW repair requiring ground disturbance (i.e., grading/repair of access road and work areas and spot repair of areas subject to flooding or scouring). Biological monitoring of these maintenance activities is to prevent impacts to vegetation communities or wildlife habitat not within the permanent project impact footprint or to record and report unauthorized impacts outside the footprint to the Lead Agencies and other agencies with jurisdiction over the project to ensure the unauthorized impacts are mitigated in accordance with Mitigation Measure B-1a. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction and the maintenance activities listed above (or access roads used during maintenance activities in the case of vernal pools/water-holding basins). The qualified biologist shall perform periodic inspections of construction once or twice per week, as defined by the Wildlife Agencies, depending on the sensitivity of the resources. The qualified biologist shall send weekly monitoring reports to the Lead Agencies and other agencies with jurisdiction over the project and shall record any reduction or increase in construction impacts so that mitigation requirements can be revised accordingly. The final impact/mitigation calculations shall be submitted to the Lead Agencies and other agencies with jurisdiction over the project for review and approval. The qualified biologist shall send annual monitoring reports of maintenance activities to the Lead Agencies and other agencies with jurisdiction over the project that describe the types of maintenance that occurred, at what locations they occurred, and whether or not there were unauthorized impacts that require mitigation. The Applicant, its contractors and subcontractors, and their respective project personnel, shall refer all environmental issues, including wildlife relocation, sick or dead wildlife, hazardous waste, or questions about environmental impacts to the qualified biologist. Experts in wildlife handling (e.g., Project Wildlife) may need to be brought in by the qualified biologist for assistance with wildlife relocations.

The qualified biologist shall have the authority to issue stop work orders if any part of the mitigation measures or APMs are being violated. The qualified biologist shall immediately notify the Lead Agencies and other agencies with jurisdiction over the project, and the Applicant of any significant events, including impacts outside the construction zone or maintenance impacts outside the authorized permanent impact footprints if they are discovered during construction or monitoring of maintenance activities. Reinitiation of work following a stop work order shall only occur when the Lead Agencies and other agencies with jurisdiction over the project are satisfied that the impacts have been fully documented, that compensation for these impacts shall be made, and that any additional protection measures they deem necessary shall be undertaken.

**B-1c Perform protocol surveys.** The Applicant would perform any detailed on-the-ground protocol surveys, with regard to specific sensitive plant or wildlife species whose habitat would be impacted by the project based on final design, in accordance with state or federal regulations or statutes. The Applicant would submit results of these surveys to the USFWS and CDFG and consult on reasonable and feasible mitigation measures for potential impacts, prior to any ground disturbing activities in a particular area. Mitigation would prioritize avoidance as the primary means to address impacts. If avoidance is not feasible, then relocation/restoration would be implemented. Where relocation/restoration is not feasible or deemed not to fully address impacts,

then mitigation through the Applicant’s NCCP mitigation credits or if necessary compensation via another on- or off-site purchase or dedication of habitat at a ratio deemed appropriate, see B-1a.

- B-1d Train project personnel.** Prior to construction, all the Applicant’s contractors, subcontractors and project personnel would receive training regarding the appropriate work practices necessary to effectively implement the biological APMs and to comply with the applicable environmental laws and regulations including appropriate wildlife avoidance, and impact minimization procedures, the importance of these resources and the purpose and necessity of protecting them; and methods for protecting sensitive ecological resources.
- B-1e Construction and survey activities shall be restricted based on final design engineering drawings.** The area limits of project construction and survey activities would be predetermined based on the temporary and permanent disturbance areas noted on the final design engineering drawings, with activity restricted to and confined within those limits. Survey personnel shall keep survey vehicles on existing roads. During project surveying activities, brush clearing for footpaths, line-of-sight cutting, and land surveying panel point placement in sensitive habitat would require prior approval from the project biological resource monitor in conformance with the APMs. Hiking off roads or paths for survey data collection is allowed year-round as long as other APMs are met. Stringing of new wire and reconductoring for the project would be allowed year round in sensitive habitats if the conductor is not allowed to drag on the ground or in brush and all vehicles used during stringing remain on project access roads. Where stringing requires that conductor drop within brush of drag on or through the brush or ground or vehicles leave project access roads, the Applicant would perform a site survey, or more as appropriate, to determine presence or absence of endangered nesting birds or other endangered species in the work area. The Applicant would submit results of this survey to the USFWS and CDFG and consult on reasonable and feasible mitigation measures for potential impacts, prior to dropping wire in brush, dragging wire on the ground or through brush, or taking vehicles off project access roads. However, this survey would not replace the need the Applicant to perform detailed on-the-ground surveys. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity where any sensitive biological resources or wildlife habitats are encountered in the field.
- B-1f Build access roads at right angles to streambeds and washes.** To the extent feasible, access roads would be built at right angles to the streambeds and washes. Where it is not feasible for access roads to cross at right angles, the Applicant would limit roads constructed parallel to streambeds or washes to a maximum length of 500 feet at any one transmission line crossing location. Such parallel roads would be constructed in a manner that minimizes potential adverse impacts on “waters of the U.S.” or waters of the state. Streambed crossings and roads constructed parallel to streambeds would require review and approval of necessary permits from the agencies with jurisdiction over the project. Culverts would be installed where needed for right angle crossings, but rock crossings would be utilized across most right angle drainage crossings. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels and stream banks (e.g., structures would not be located within a stream channel, construction activities would avoid sensitive features). Prior to construction in streambeds and washes, the Applicant would perform a pre-activity survey, or more as appropriate, to determine the presence or absence of endangered riparian species. However, this survey would not replace the need for the Applicant to perform detailed on-the-ground surveys.
- B-1g Comply with all applicable environmental laws and regulations.** In the construction, operation, and maintenance of the project, the Applicant would comply with all applicable environmental

laws and regulations, including, without limitation, those regulating and protecting wildlife and its habitat.

**B-1h Restrict the construction of access and spur roads.** Except when not feasible due to physical or safety constraints, all project vehicle movement would be restricted to existing access roads and access roads constructed as a part of the project and determined and marked by the Applicant in advance for the contractor, contractor-acquired accesses, or public roads. New access road construction for the project would be allowed year-round. However, when feasible, every effort would be made to avoid constructing roads during the nesting season. When it is not feasible to keep vehicles on existing access roads or to avoid constructing new access roads during the nesting, breeding, or flight season, the Applicant would perform a site survey, or more as appropriate, in the area where the work is to occur. This survey would be performed to determine presence or absence of endangered nesting birds, or other endangered species in the work area. The Applicant would submit results of this survey to the agencies with jurisdiction over the project and consult on reasonable mitigation measures to avoid or minimize for potential impacts, prior to vehicle use off existing access roads or the construction of new access roads. However, this survey would not replace the need for the Applicant to perform detailed on-the-ground surveys otherwise required. Parking or driving underneath oak trees is not allowed in order to protect root structures. In addition to regular watering to control fugitive dust created during clearing, grading, earth-moving, excavation, and other construction activities which could interfere with plant photosynthesis, a 15 miles per hour speed limit shall be observed on dirt access roads to reduce dust and allow reptiles and small mammals to disperse.

All new access roads or spur roads constructed as part of the project that are not required as permanent access for future project maintenance and operation would be permanently closed. Where required, roads would be permanently closed using the most effective feasible and least environmentally damaging methods appropriate to that area with the concurrence of the underlying landowner and the governmental agency having jurisdiction (e.g., stockpiling and replacing topsoil or rock replacement). This would limit new or improved accessibility into the area. Mowing of vegetation can be an effective method for protecting the vegetative understory while at the same time creating access to the work area. Mowing should be used when permanent access is not required since, with time, total re-vegetation is expected. If mowing is in response to a permanent access need, but the alternative of grading is undesirable because of downstream siltation potential, it should be recognized that periodic mowing would be necessary to maintain permanent access. The project biological construction monitor shall conduct checks on mowing procedures to ensure that mowing for temporary or permanent access roads is limited to a 14-foot-wide area on straight portions of the road and a 16- to 20-foot-wide area at turns, and that the mowing height is no less than 4 inches from finished grade.

**B-1i Protect and restore vegetation.** In construction areas where re-contouring is not required, vegetation shall be left in place wherever possible to avoid excessive root damage and allow for re-sprouting.

Only the minimum amount of vegetation necessary for the construction of structures and facilities will be removed. Topsoil located in areas containing sensitive habitat shall be conserved during excavation and reused as cover on disturbed areas to facilitate re-growth of vegetation. Topsoil located in developed or disturbed areas is excluded from this Mitigation Measure.

Disturbed soils shall be re-vegetated with an appropriate seed mix that does not contain invasive, non-native plant species.

**B-2a Provide restoration/compensation for affected jurisdictional areas.** Impacts to areas under the jurisdiction of the ACOE, Regional Water Boards, State Water Board, and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible (including

for emergency repairs), the Applicant shall provide the necessary mitigation required as part of wetland permitting by creation/restoration/preservation of suitable jurisdictional or equivalent habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation would be determined in consultation with the Lead Agencies and other agencies with jurisdiction over the project, ACOE, Regional Water Boards, State Water Board, and CDFG as part of the wetland permitting process. It is anticipated that the sites would be in close proximity to the impacts or in the same watershed. A jurisdictional delineation and impact assessment shall be prepared based on the final alignment and final engineering plans when they are complete. Mitigation ratios would range from 1:1 up to 4:1 and would depend on the sensitivity of the jurisdictional habitat and on the requirements of the wetland permitting agencies. The width of wetland buffers would also depend on the sensitivity of the jurisdictional habitat and on the requirements of the wetland permitting agencies. It is anticipated that at least a 1:1 ratio of the mitigation would include creation of jurisdictional habitat so there would be no net loss of jurisdictional habitat. For example, permanent impacts to emergent wetland would require a 2:1 mitigation ratio. Half (or 1:1) of the mitigation acreage would have to consist of created emergent wetland in an appropriate location to be preserved, and the other half (1:1) would require acquisition and preservation of already-existing emergent wetland (or other wetland community acceptable to the permitting agencies — ACOE, Regional Water Boards, State Water Board, and CDFG). It is also anticipated that a 1:1 ratio would be required for impacts to jurisdictional non-wetland Waters of the U.S. in the form of wetland enhancement, restoration, or creation as determined in consultation with the permitting agencies. Wetland permits shall be obtained from the ACOE, Regional Water Boards, State Water Board, and CDFG prior to initiating construction in jurisdictional areas.

All limits of construction shall be delineated with orange construction fencing and/or silt fencing. All stakes, flagging, or fencing shall be removed no later than 30 days after construction is complete. If silt fencing is used to delineate the limits of construction or as part of implementation of erosion control BMPs, the silt fencing may be left in place longer than 30 days if erosion control is still necessary. During and after construction, entrances to access roads shall be gated to prevent the unauthorized use of these roads by the general public. Signs prohibiting unauthorized use of the access roads shall be posted on these gates.

Any impacts associated with unauthorized activity (e.g., exceeding approved construction footprints) shall be mitigated at a 5:1 ratio, unless otherwise directed by the ACOE, Regional Water Boards, State Water Board, and CDFG: restoration of the unauthorized impacts shall be credited at a 1:1 ratio; the remaining 4:1 shall be acquired off site.

The Applicant shall identify a qualified Habitat Restoration Specialist to be approved by the Lead Agencies and other agencies with jurisdiction over the project, ACOE, Regional Water Boards, State Water Board, and CDFG. The Habitat Restoration Specialist shall prepare and implement a Wetland Mitigation Plan to be approved in writing by the Lead Agencies and other agencies with jurisdiction over the project, ACOE, Regional Water Boards, State Water Board, and CDFG. The Applicant shall work with the above-listed agencies until a plan is approved by all. The mitigation of habitat shall be maintained and monitored for five years after installation, or until established success criteria (specified percent cover of native and non-native species, species diversity, and species composition as compared with an undisturbed reference site) are met, to assess progress and identify potential problems with the mitigation. Remedial action (e.g., additional planting, weeding, erosion control, use of container stock, supplemental watering, etc.) shall be taken during the maintenance and monitoring period if necessary to ensure the success of the mitigation. If the mitigation fails to meet the established performance criteria after the five-year maintenance and monitoring period, maintenance and monitoring shall extend beyond the five-year period until the criteria are met or unless otherwise approved by the Lead Agencies and other agencies with jurisdiction over the project, ACOE, Regional Water Boards, State Water Board, and CDFG.

A Habitat Management Plan shall be prepared by a biologist approved by the Lead Agencies and other agencies with jurisdiction over the project, ACOE, Regional Water Boards, State Water Board, and CDFG for all acquired off-site mitigation parcels. The Habitat Management Plan must be approved in writing by the Lead Agencies and other agencies with jurisdiction over the project prior to the initiation of any activities which may impact jurisdictional areas. The Applicant shall work with the Lead Agencies and other agencies with jurisdiction over the project until a plan is approved by all. The Habitat Management Plan shall provide direction for the preservation and in-perpetuity management of all acquired, off-site mitigation parcels. The Habitat Management Plan shall include, but shall not be limited to:

- Legal descriptions of all acquired or assured mitigation parcels approved by the Lead Agencies and other agencies with jurisdiction over the project
- Baseline biological data for all mitigation parcels
- Designation of a land management entity approved by the Lead Agencies and other agencies with jurisdiction over the project to provide in-perpetuity management
- A Property Analysis Record prepared by the designated land management entity that explains the amount of funding required to implement the Habitat Management Plan
- Designation of responsible parties and their roles (e.g., provision of endowment by the Applicant to fund the Habitat Management Plan and implementation of the Habitat Management Plan by the designated land management entity)
- Management specifications including, but not limited to, regular biological surveys to compare with baseline; exotic, non-native species control; fence/sign replacement or repair, public education; trash removal; and annual reports to Lead Agencies and other agencies with jurisdiction over the project.

**B-2b Identify environmentally sensitive times and locations for tree trimming.** Environmentally sensitive tree trimming locations for the project would be identified in the Applicant’s existing vegetation management tree trim database utilized by tree trim contractors. The biological field construction monitor shall be contacted prior to trimming in environmentally sensitive areas. Whenever feasible, trees in environmentally sensitive areas, such as areas of riparian or native scrub vegetation, would be scheduled for trimming during non-sensitive (i.e., outside breeding or nesting) times. Where trees cannot be trimmed during non-sensitive times, the Applicant would perform a site survey, or more as appropriate, to determine presence or absence of endangered nesting bird species in riparian or native scrub vegetation. The Applicant would submit results of this survey to the agencies with jurisdiction over the project and consult on mitigation measures for potential impacts, prior to tree trimming in environmentally sensitive areas. However, this survey would not replace the need for the Applicant to perform detailed on-the-ground surveys as otherwise required. Where riparian areas with over-story vegetation are crossed, tree removal (i.e., clear-cut) widths would be varied where feasible to minimize visual landscape contrast and to maintain habitat diversity at established wildlife corridor edges. Where tree removal widths cannot be varied, the Applicant would consult with the agencies with jurisdiction over the project to develop alternative tree removal options that could reasonably maintain edge diversity.

**B-2c Avoid sensitive features.** In areas designated as sensitive by the Applicant or the resource agencies, to the extent feasible structures and access roads would be designed to minimize impacts to sensitive features. These areas of sensitive features include but are not limited to high-value wildlife habitats, sensitive vegetation communities, and high value plant habitats. If the sensitive features cannot be completely avoided, structures and access roads would be placed to minimize the disturbance to the extent feasible. When it is not feasible to avoid construction or access roads in high value wildlife habitats, the Applicant would perform a site survey to determine presence or

absence of endangered species in sensitive habitats. The Applicant would submit results of this survey to the USFWS and consult on mitigation measures for potential impacts, prior to constructing structures or access roads. However, this survey would not replace the need for the Applicant to perform detailed on-the-ground surveys as otherwise required. Where it is not feasible for access roads to avoid sensitive water resource features, such as streambed crossings, such crossings would be built at right angles to the streambeds. Where such crossings cannot be made at right angles, roads constructed parallel to streambeds would be limited to a maximum length of 500 feet at any one transmission line crossing location. Such parallel roads would be constructed in a manner that minimizes potential adverse impacts on “waters of the U.S.” Streambed crossings or roads constructed parallel to streambeds would require review and approval of necessary permits from the ACOE, CDFG, and RWQCB.

**B-3a Prepare and implement a Weed Control Plan.** The Applicant shall prepare and implement a comprehensive, adaptive Weed Control Plan for pre-construction and long-term invasive weed abatement. Where the Applicant owns the ROW property, the Weed Control Plan shall include specific weed abatement methods, practices and treatment timing developed in consultation with the agencies with jurisdiction over the project as appropriate. On the ROW easement lands administered by public agencies (BLM, USDA Forest Service, Wildlife Agencies, and State Parks) the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the ROW land-holding governmental agencies for final authorization of weed control methods, practices, and timing prior to implementation of the Weed Control Plan on public lands. ROW easements located on private lands shall include adaptive provisions for the implementation of the Weed Control Plan. Prior to implementation, the Applicant shall work with the landowners to obtain authorization of the weed control treatment that is required. Developed land shall be excluded from weed control.

The Weed Control Plan shall include the following:

- A pre-construction weed inventory shall be conducted by surveying the entire ROW and areas immediately adjacent to the ROW (where access and permission can be secured) as well as at all ancillary facilities associated with the project for weed populations that: (1) are considered as being a priority for control and (2) aid and promote the spread of wildfires (such as cheatgrass [*Bromus tectorum*], Saharan mustard [*Brassica tournefortii*] and medusa head [*Taeniatherum caput-medusae*]). These populations shall be mapped and described according to density and area covered. These plant species shall be treated (where access and permission can be secured) prior to construction or at a time when treatments would be most effective based on phenology according to control methods and practices for invasive weed populations designed in consultation with the agencies with jurisdiction over the project as appropriate.
- A pre-construction weed inventory shall also be conducted by surveying areas that will be directly impacted by the project for weed populations that are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC, 2006) or are weed species of concern. These plant species shall be treated prior to construction or at a time when treatments would be most effective based on phenology according to control methods and practices for invasive weed populations designed in consultation with Cal-IPC.
- Weed control treatments shall include all legally permitted chemical, manual and mechanical methods applied with the authorization of the County Agriculture Commissioner and the ROW easement land-holding agencies where appropriate. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA) and implemented by a Licensed Qualified

Applicator. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the County Agriculture Commissioner. The timing of the weed control treatment shall be determined for each plant species in consultation with the PCA, the County Agriculture Commissioner, and Cal-IPC, or the tribal government, as appropriate, with the goal of controlling populations before they start producing seeds.

For the lifespan of the project (i.e., as long as the project is physically present), long-term measures to control the introduction and spread of noxious weeds in the project area shall be taken as follows.

- From the time construction begins until two years after construction is complete, annual surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required in the survey areas described above. After this time, surveying for new invasive weed populations and monitoring of identified and treated populations shall be required at an interval of every two years. However, the treatment of weeds shall occur on a minimum annual basis, unless otherwise approved by the PCA, County Agriculture Commissioner, and Cal-IPC.
- During project construction and operation/maintenance, all seeds and straw materials shall be certified weed free, and all gravel and fill material shall be certified weed free by the County Agriculture Commissioner’s Office.
- During project construction and operation/maintenance, vehicles and all equipment shall be washed (including wheels, undercarriages, and bumpers) at an off-site washing facility (e.g., a car wash or truck wash) immediately before project construction begins and prior to returning to project construction should equipment be used in a different construction area. In addition, tools such as chainsaws, hand clippers, pruners, etc. shall be washed at an off-site washing facility immediately before project construction begins and prior to returning to project construction should tools be used in a different construction area. In addition, vehicles, tools, and equipment shall be washed at an off-site washing facility should these vehicles, tools, and equipment have been used in an area where invasive plants have been mapped during the pre-construction weed control inventory and as directed by the biological construction monitor, prior to entering a project area free of populations of invasive plants (as determined by the pre-construction weed control inventory). Finally, vehicles, tools, and equipment used for maintenance shall be washed at an off-site washing facility immediately before each maintenance event. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill; an effort shall be made to use wash facilities that use recycled water. A written daily log shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the Lead Agencies and other agencies with jurisdiction over the project and biological monitor for inspection at any time and shall be submitted to the Lead Agencies on a monthly basis during construction and submitted annually to the Lead Agencies during operation/maintenance.

**B-5a Conduct rare plant surveys, and implement appropriate avoidance/minimization/compensation strategies.** A qualified biologist shall survey for special status plants in the spring of a year with adequate rainfall prior to initiating construction activities in a given area. If a survey can not be conducted due to inadequate rainfall, then the Applicant shall consult with the agencies with jurisdiction over the project to determine if construction may begin in the absence of survey

data and what mitigation would be required, or whether construction would not be allowed until such data is collected. A report of special status plants observed shall be prepared and submitted for approval by the Lead Agencies and other agencies with jurisdiction over the project prior to activities which may impact the plant resources.

All special status plant populations shall be staked or flagged by a qualified biologist approved by the Lead Agencies and other agencies with jurisdiction over the project and the Wildlife Agencies. All stakes, flagging, or fencing shall be removed no later than 30 days after construction is complete.

Impacts to federal or State listed plant species shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through salvage and relocation via a restoration program and/or off-site acquisition and preservation of habitat containing the plant at a 2:1 ratio. Avoidance may not be feasible due to physical or safety constraints. The Lead Agencies and the Wildlife Agencies shall decide whether the Applicant can restore rare plant populations or shall acquire habitat with rare plant populations off site (locations to be approved by the Lead Agencies and other agencies with jurisdiction over the project and the Wildlife Agencies). A qualified biologist shall prepare a Restoration Plan that shall indicate where restoration would take place. The restoration plan shall also identify the goals of the restoration, responsible parties, methods of restoration implementation, maintenance and monitoring requirements, final success criteria, and contingency measures. The Applicant shall work with the Lead Agencies, Wildlife Agencies, and other agencies with jurisdiction over the project until a plan is approved by all.

Impacts to moderately sensitive plant species (i.e., BLM Sensitive, USDA Forest Service Sensitive, CNPS List 1 and 2 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseeding (with locally collected seed stock) or relocation to temporarily disturbed areas. Avoidance may not be feasible due to physical or safety constraints.

Where reseeding or salvage and relocation is required, the Applicant shall identify a qualified Habitat Restoration Specialist to be approved by the Lead Agencies and other agencies with jurisdiction over the project and the Wildlife Agencies. The Habitat Restoration Specialist shall prepare and implement a Restoration Plan for reseeding or salvaging and relocating special status plant species to be approved by the Lead Agencies and other agencies with jurisdiction over the project and the Wildlife Agencies in writing prior to impacting the plant resources. The Applicant shall work with the above-listed agencies until a plan is approved by all. The reseeding or relocation of plants shall be maintained and monitored for five years after installation, or until established success criteria are met, to assess progress and identify potential problems with the mitigation. Remedial action (e.g., additional seeding, weeding, erosion control, use of container stock, supplemental watering, etc.) shall be taken during the maintenance and monitoring period if necessary to ensure the success of the restoration. If the restoration fails to meet the established performance criteria after the five-year maintenance and monitoring period, maintenance and monitoring shall extend beyond the five-year period until the criteria are met or unless otherwise approved by the Lead Agencies and other agencies with jurisdiction over the project and the Wildlife Agencies.

A Habitat Management Plan for any required, off-site mitigation shall be prepared by a biologist approved by the Lead Agencies and other agencies with jurisdiction over the project. The Habitat Management Plan must be approved in writing by the Lead Agencies and Wildlife Agencies prior to the initiation of any activities which may impact special status plant resources. The Applicant shall work with the agencies until a plan is approved by all. The Habitat Management Plan shall provide direction for the preservation and in-perpetuity management of all acquired off-site mitigation parcels. The Habitat Management Plan shall include, but shall not be limited to:

- Legal descriptions of all acquired or assured off-site mitigation parcels approved by the Lead Agencies, other agencies with jurisdiction over the project, and Wildlife Agencies
- Baseline biological data for all mitigation parcels
- Designation of a land management entity approved by the Lead Agencies, other agencies with jurisdiction over the project, and Wildlife Agencies to provide in-perpetuity management
- A Property Analysis Record prepared by the designated land management entity that explains the amount of funding required to implement the Habitat Management Plan
- Designation of responsible parties and their roles (e.g., provision of endowment by the Applicant to fund the Habitat Management Plan and implementation of the Habitat Management Plan by the designated land management entity)
- Management specifications including, but not limited to, regular biological surveys to compare with baseline; exotic, non-native species control; fence/sign replacement or repair, public education; trash removal; and annual reports to the Lead Agencies, other agencies with jurisdiction over the project, and Wildlife Agencies.

**B-5b Delineate sensitive plant populations.** Prior to construction, plant population boundaries designated as sensitive by USFWS or CDFG and other resources designated sensitive by the Applicant and resource agencies would be clearly delineated with clearly visible flagging or fencing, which shall remain in place for the duration of construction. Flagged areas would be avoided to the extent practicable during construction activities in that area. Where these areas cannot be avoided, focused surveys for covered plant species shall be performed in conformance with Mitigation Measure B-1d, and the responsible resource agency(s) would be consulted for appropriate mitigation and/or revegetation measures prior to disturbance. Notification of presence of any covered plant species to be removed in the work area would occur within ten (10) working days prior to Project activity, during which time the USFWS or CDFG may remove such plant(s) or recommend measures to minimize or reduce the take. If neither USFWS nor CDFG has removed such plant(s) within ten (10) working days following written notice, the Applicant may proceed with work and cause a take of such plant(s), if minimization measures are not implemented.

**B-5c No collection of plants or wildlife.** Plant or wildlife species may not be collected for pets or any other reason.

**B-5d Salvage sensitive species for replanting or transplanting.** Species identified as sensitive by the land managing agency shall be salvaged where avoidance is not feasible in accordance with State law. Generally, salvage may include removal and stockpiling for replanting on site, removal and transplanting out of surface disturbance area, removal and salvage by private individuals, and removal and salvage by commercial dealers, or any combination.

**B-6a Littering is not allowed.** Littering is not allowed. Project personnel would not deposit or leave any food or waste in the project area, and no biodegradable or non-biodegradable debris would remain in the right-of-way following completion of construction.

- B-6b Survey areas for brush clearing.** Brush clearing around any project facilities (e.g., structures, substations) for fire protection, visual inspection or project surveying, in areas which have been previously cleared or maintained within a two-year or shorter period shall not require a pre-activity survey. In areas not cleared or maintained within a two-year period, brush clearing shall not be conducted during the breeding season (March through August) without a pre-activity survey for vegetation containing active nests, burrows, or dens. The pre-activity survey performed by the on-site biological resource monitor would make sure that the vegetation to be cleared contains no active migratory bird nests, burrows, or active dens prior to clearing. If occupied migratory bird nests are present, fire protection or visual inspection brush clearing work would be avoided until after the nesting season, or until the nest becomes inactive. If no nests are observed, clearing may proceed. Where burrows or dens are identified in the reconnaissance-level survey, soil in the brush clearing area would be sufficiently dry before clearing activities occur to prevent mechanical damage to burrows that may be present.
- B-6c Protect mammals and reptiles in excavated areas.** Construction holes left open over night shall be covered. Covers shall be secured in place nightly, prior to workers leaving the site, and shall be strong enough to prevent livestock or wildlife from falling through and into a hole. Holes and/or trenches shall be inspected prior to filling to ensure absence of mammals and reptiles.
- Excavations shall be sloped on one end to provide an escape route for small mammals and reptiles.
- B-6d Reduce construction night lighting on sensitive habitats.** Reduce construction night lighting on sensitive habitats. Exterior lighting within the project area adjacent to preserved habitat shall be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to the maximum extent practicable. Vehicle traffic associated with project activities would be kept to a minimum volume and speed to prevent mortality of nocturnal wildlife species that may be moving about.
- B-7a Cover all steep-walled trenches or excavations used during construction to prevent the entrapment of wildlife (e.g., reptiles and small mammals).** Construction shall be covered at all times except when being actively utilized. If the trenches or excavations cannot be covered, exclusion fencing (i.e., silt fencing) shall be installed around the trench or excavation, or it shall be covered to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife shall be inspected by the qualified biologist (see Mitigation Measure B-1c) a minimum of three times per day and immediately before backfilling. Furthermore, employees and contractors shall look under vehicles and equipment for the presence of wildlife before movement. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the qualified biologist. Should a dead or injured listed species be found in a trench or excavation or anywhere in the construction zone or along an access road, the qualified biologist shall contact the Lead Agencies and other agencies with jurisdiction over the project and the Wildlife Agencies within 48 hours of the finding. The qualified biologist shall report the species found, the location of the finding, the cause of death (if known), and shall submit a photograph and any other pertinent information.
- B-7b Minimize impacts to bighorn sheep and provide compensation for loss of critical habitat.** With regard to timing of activities, construction and maintenance activities (including the use of helicopters) in bighorn sheep critical habitat shall be limited to outside the lambing season and the period of greatest water need, or a minimum ceiling of 1,500 feet for helicopter flights shall be maintained. The lambing season is January 1 through June 30. The period of greatest water need is May through September. Construction and maintenance activities in PBS critical habitat may occur during the lambing season and/or period of greatest water need if prior approval is obtained from the Wildlife Agencies.

The Applicant shall provide compensation for direct loss of critical habitat at a 5:1 ratio for permanent impacts and at a 3:1 ratio (including a combination of on-site restoration and off-site purchase) for temporary impacts with critical habitat or other habitat acceptable to the Wildlife Agencies and BLM. Impacts to critical habitat must be mitigated within the same Critical Habitat Unit where the impacts occurred.

A Habitat Management Plan shall be prepared by a biologist approved by the Lead Agencies and Wildlife Agencies for all acquired PBS habitat. The Habitat Management Plan must be approved in writing by the Lead Agencies and Wildlife Agencies prior to the initiation of any activities which may impact (directly or indirectly) bighorn sheep or its habitat. The Applicant shall work with the Lead Agencies and Wildlife Agencies, and State Parks until a plan is approved by all. The Habitat Management Plan shall provide direction for the preservation and in-perpetuity management of all acquired habitat. The Habitat Management Plan shall include, but shall not be limited to:

- Legal descriptions of all acquired or assured habitat approved by the Lead Agencies and Wildlife Agencies
- Baseline biological data for all acquired habitat
- Designation of a land management entity approved by the Lead Agencies and Wildlife Agencies to provide in-perpetuity management
- A Property Analysis Record prepared by the designated land management entity that explains the amount of funding required to implement the Habitat Management Plan
- Designation of responsible parties and their roles (e.g., provision of endowment by the Applicant to fund the Habitat Management Plan and implementation of the Habitat Management Plan by the designated land management entity)
- Management specifications including, but not limited to, regular biological surveys to compare with baseline; exotic, non-native species control; fence/sign replacement or repair, public education; trash removal; and annual reports to Lead Agencies and Wildlife Agencies.

**B-7c Conduct burrowing owl surveys, and implement appropriate avoidance/minimization/compensation strategies.** A survey shall be conducted within 30 days prior to the initiation of construction by a qualified biologist to determine the presence or absence of the burrowing owl in the construction zone plus 250 feet beyond. In addition, the burrowing owl shall be looked for opportunistically as part of other surveys and monitoring required during project construction. If the burrowing owl is absent, then no mitigation is required.

If the burrowing owl is present, no disturbance shall occur within 50 meters (approximately 160 ft) of occupied burrows from September 1 through January 31 or within 75 meters (approximately 250 ft) of occupied burrows from February 1 through August 31 (CDFG, 1995).

During construction, any pipe or similar construction material that is stored on site for one or more nights shall be inspected for burrowing owls by a qualified biologist before the material is moved, buried, or capped.

Passive relocation of owls shall be implemented prior to construction only at the direction of the CDFG and only if the above-described occupied burrow disturbance absolutely cannot be avoided (e.g., due to physical or safety constraints). Relocation of owls shall only be implemented during the non-breeding season (September 1 through January 31; CDFG, 1995). Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 meters from the impact zone and that are within or contiguous to a minimum of 6.5 acres of preserved (or acquired and preserved if not already preserved) foraging

habitat for each relocated owl (single owl or owl pair). Passive relocation is accomplished by first creating two artificial burrows in contiguous, preserved foraging habitat (if no natural burrows exist) for each occupied burrow that would be impacted; and second, installing one-way doors on occupied burrow entrances so owls can leave the burrow but not re-enter it. Following passive relocation, the area of impact and the preserved foraging habitat with alternate burrows are surveyed daily for one week to confirm owl use of alternate burrows before excavation of burrows in the impact zone. All passive relocation shall be conducted by a biologist approved by the CDFG. If the alternate burrows are not used by the relocated owls, then the Applicant shall work with the CDFG to provide alternate mitigation for burrowing owls. If the alternate burrows are used, no other mitigation shall be required.

If it is not possible to preserve contiguous habitat on which to provide alternate burrows (e.g., on private land), and occupied owl burrows would be directly impacted, then the owls shall be passively relocated without the creation of alternate burrows prior to construction (relocation should only be implemented during the non-breeding season [September 1 through January 31]). The loss of occupied owl habitat shall be mitigated by acquiring and preserving other occupied habitat elsewhere (as explained below) per the Staff Report on Burrowing Owl Mitigation (CDFG, 1995) and the Burrowing Owl Survey Protocol and Mitigation Guidelines (The Burrowing Owl Consortium, 1993), or as otherwise determined in consultation with the CDFG.

Impacted occupied habitat shall be mitigated by 1) acquiring and preserving occupied habitat at a rate of 1.5 times 6.5 acres (or 9.75 acres) per pair or single bird impacted, or 2) acquiring and preserving unoccupied habitat contiguous with currently occupied habitat at a rate of two times 6.5 acres (or 13 acres) per pair or single bird impacted, or 3) acquiring and preserving suitable unoccupied habitat at a rate of three times 6.5 acres (or 19.5 acres) per pair or single bird impacted. All acquired habitat shall be acceptable to the CDFG and shall be protected and managed for the burrowing owl in perpetuity.

A Habitat Management Plan shall be prepared by a biologist approved by the Lead Agencies and CDFG for all acquired burrowing owl habitat. The Habitat Management Plan must be approved in writing by the Lead Agencies and Wildlife Agencies, and prior to the initiation of any activities which may impact (directly or indirectly) the burrowing owl or its habitat. The Applicant shall work with the Lead Agencies and Wildlife Agencies until a plan is approved by all. The Habitat Management Plan shall provide direction for the preservation and in-perpetuity management of all acquired burrowing owl habitat. The Habitat Management Plan shall include, but shall not be limited to:

- Legal descriptions of all acquired or assured owl habitat approved by the Lead Agencies and Wildlife Agencies
- Baseline biological data for all acquired burrowing owl habitat
- Designation of a land management entity approved by the Lead Agencies and Wildlife Agencies to provide in-perpetuity management
- A Property Analysis Record prepared by the designated land management entity that explains the amount of funding required to implement the Habitat Management Plan
- Designation of responsible parties and their roles (e.g., provision of endowment by the Applicant to fund the Habitat Management Plan and implementation of the Habitat Management Plan by the designated land management entity)
- Management specifications including, but not limited to, regular biological surveys to compare with baseline; exotic, non-native species control; fence/sign replacement or repair,

public education; trash removal; and annual reports to the Lead Agencies and Wildlife Agencies.

**B-7d Implement appropriate avoidance/minimization strategies for desert tortoise.** To the extent possible, construction activities shall be scheduled when tortoises are inactive (November 1 – March 15). A clearance survey for the desert tortoise shall be conducted before construction ground disturbance and following the guidelines established by The Desert Tortoise Council (1999) as follows.

- Burrows within 100 feet of the construction zone shall be flagged by a person authorized by the USFWS to handle desert tortoises so that the qualified biologist would be able to more easily locate them during construction. The qualified biologist shall be on site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoise.
- All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist.
- Desert tortoises that are found above ground during construction and need to be moved from potential harm shall be placed in the shade of a shrub by the USFWS-authorized biologist. All desert tortoises removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist shall be allowed some judgment and discretion to ensure that the survival of the desert tortoise is likely.
- If a tortoise is located in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way.
- A worker bonus program shall be implemented that would reward construction/maintenance staff who spot a tortoise within the work area and, without touching or disturbing the animal, notify the authorized biologist for action.
- Any routes of travel that require construction or modification, or any additional work areas, shall be surveyed for tortoises by the authorized biologist before modification or construction of the route or construction or use of a new work area.
- Trench segments or other excavations shall be provided with tortoise escape ramps at one-mile intervals. All excavations shall be inspected for tortoises three times daily and before backfilling.
- Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If this does not occur within 15 minutes, the authorized biologist shall remove and relocate the tortoise.
- Construction pipe, culverts, or similar structures with a diameter of three inches or greater that are stored on site for one or more nights shall be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored on the construction site.

- All construction and maintenance activities in desert tortoise habitat shall be conducted between dawn and dusk.
- GPS locations of tortoises will be reported to the Lead Agencies and the Wildlife Agencies.

**B-7e Conduct pre-construction surveys and relocation for American badger.** Prior to construction, the Applicant shall conduct pre-construction surveys for American badger. Surveys will be conducted prior to ground disturbance activities in areas that contain habitat for this species. Badger dens located outside the project area shall be flagged for avoidance. Unoccupied dens located in the right of way shall be covered to prevent the animal from re-occupying the den prior to construction. If occupied dens are identified in the area of the ROW that must be disturbed, the CDFG/BLM/Forest Service shall be consulted regarding options for action. Hand-excavation is an option if occupied dens cannot be avoided, but alternatives shall be considered due to potential danger to biologists. Dens shall be hand-excavated only before or after the breeding season (February 1–May 30). Any relocation of badgers shall take place after consultation with the BLM, Forest Service, and CDFG.

**B-7f Conduct pre-construction surveys for roosting bats.** The Applicant shall conduct focused surveys for suitable roosting habitat or nursery sites for sensitive bats at the construction sites, tower locations, access/spur roads, and laydown/staging areas that occur in rocky areas or in areas where caves or old mines are present. If suitable roosting/nursery sites are found, then focused surveys shall be conducted to determine if the sites support sensitive bat species. If sensitive bat species occur at these sensitive roosting/nursery sites, then adjustments of the locations of access/spur roads and laydown/staging areas shall be made to avoid these sites. If adjustments cannot avoid these sites, then construction shall be delayed until the breeding cycles for the sensitive bats are completed. The Applicant shall consult with a bat specialist in order to determine when the breeding cycle for the sensitive bats are completed. The Applicant shall document the results of the surveys and any avoidance of roosting/nursery sites for sensitive bats.

**B-8a Conduct pre-construction surveys and monitoring for breeding birds.** All vegetation clearing, except tree trimming or removal, shall take place between August 16 and January 14 (i.e., outside of the general avian breeding season of January 15 through August 15). Tree removal or trimming shall take place between September 16 and December 31 (i.e., outside the raptor breeding season of January 1 through September 15).

If project construction (not vegetation clearing or tree trimming/removal) cannot occur completely outside the general avian breeding season, then pre-construction surveys for non-listed bird species' nests shall be conducted by a qualified biologist within 100 feet of the construction zone within 10 calendar days prior to the initiation of construction that would occur between January 15 and August 15. The results of the survey shall be submitted to the Wildlife Agencies for review and approval prior to initiating any construction activities.

If project construction (not vegetation clearing or tree trimming/removal) including the use of helicopters cannot occur completely outside the raptor breeding season, then pre-construction surveys for active raptor nests shall be conducted by a qualified biologist within 500 feet of the construction zone within 10 calendar days prior to the initiation of construction that would occur between January 1 and September 15. The results of the survey shall be submitted to the Wildlife Agencies for review and approval prior to initiating any construction activities.

If no active nests are observed, construction may proceed. If active nests are found, work may proceed provided that construction activity is 1) located at least 500 feet from raptor nests, 2) located at least 160 to 250 feet from occupied burrowing owl burrows (CDFG, 1995; see Mitigation Measure B-7d), 3) located at least 300 feet from listed bird species nests, 4) located at least 100 feet from non-listed bird species nests, and 5) noise levels do not exceed 60

dB(A)hourly Leq at the edge of nesting territories (American Institute of Physics, 2005) as determined by a qualified biologist in coordination with a qualified acoustician. There may be a reduction of these buffer zones depending on site-specific conditions or the existing ambient level of activity. The Applicant shall contact Wildlife Agencies to determine the appropriate buffer zone. In the case of raptors (except the burrowing owl), the noise level restriction stated above does not apply. Otherwise, if the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall have the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. The qualified biologist shall be responsible for documenting the results of the surveys and the ongoing monitoring and for reporting these results to the Lead Agencies, other agencies with jurisdiction over the project, and Wildlife Agencies.

- B-8b Removal of raptor nests.** 1. Prior to construction, the Applicant shall remove all existing raptor nests from structures that would be affected by project construction. 2. Removal of nests shall occur outside the raptor breeding season (January to July). 3. If it is necessary to remove an existing raptor nest during the breeding season, a qualified biologist shall survey the nest prior to removal to determine if the nest is active. A nest would be considered active if it contains eggs or fledglings. If the nest does not contain eggs or nestlings and is inactive, it shall be removed promptly. If a nest is determined to be active, the nest shall not be removed and the biologist shall monitor the nest to ensure nesting activities/breeding activities are not disrupted. If the biological monitor determines that project activities are disturbing or disrupting nesting activities, the monitor shall make feasible recommendations to reduce the noise and/or disturbance in the vicinity of the nest.
- B-9a Survey for bat nursery colonies.** A CDFG-approved biologist shall conduct a habitat assessment for bat nursery colonies prior to any construction activity. Then, the approved biologist shall conduct a survey for bat nursery colonies or signs of such colonies prior to construction. Direct impacts to a nursery colony site shall not be allowed, and approach of, or entrance to, an active nursery colony site shall be prohibited. Before any blasting or drilling in the vicinity of a nursery colony site, the CDFG-approved biologist shall work with the construction crew to devise and implement methods to minimize potential indirect impacts to the nursery colony site from falling rock or substantial vibration (while a nursery colony is active). The methods shall include an option to halt any construction activity that would cause falling rock, substantial vibration impacts, or any other construction-related impact (including lighting used for night work) to a nursery colony as determined by the approved biologist, until the colony is inactive. Should falling rock block the entrance to a nursery colony site, the contractor shall work with the approved biologist to re-open an entrance to the site.
- B-10a Utilize collision-reducing techniques in installation of transmission lines.** The Applicant shall install the transmission lines utilizing Avian Power Line Interaction Committee standards for collision-reducing techniques as outlined in “Mitigating Bird Collisions with Power Lines: The State of the Art in 1994” (APLIC, 1994) as follows. Placement of towers and lines shall not be located above existing towers and lines, topographic features, or tree lines to the maximum extent practicable. Power lines should be clustered in the vertical and horizontal planes, aligned with existing geographic features or tree lines, and located parallel (rather than perpendicular) to prevailing wind patterns to the maximum degree feasible.

Additionally, overhead lines that are located in highly utilized avian flight paths shall be marked utilizing fixed mount Firefly Flapper/Diverters, swan flight diverter coils, or other diversion devices, if proven more effective, as to be visible to birds and to reduce avian collision with power lines.

- Where such markers are installed, the Applicant shall fund a study to determine the effectiveness of the markers as a collision prevention measure since there are few, if any, studies that show if such markers work. The Applicant shall develop a draft study protocol and submit it to the Wildlife Agencies and State Parks, as well as to the Lead Agencies, for review. The Applicant shall continue to work with these agencies until approval of a final study protocol is obtained. If the study shows the markers to be ineffective, the Applicant shall coordinate with the Wildlife Agencies and State Parks to develop alternate collision protection measures.
- The Applicant shall implement an avian reporting system for documenting bird mortalities to help identify problem areas. The reporting system shall follow the format in Appendix C of “Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006” (APLIC, 2006) or a similar format. The Applicant shall submit a draft reporting protocol and reporting system to the Wildlife Agencies and State Parks, as well as to the Lead Agencies, for review and approval. The Applicant shall continue to work with these agencies until approval of a final reporting protocol and reporting system is obtained. The Applicant shall develop and implement methods to reduce mortalities in identified problem areas. The methods shall be approved by the Wildlife Agencies, State Parks and Lead Agencies prior to implementation. Bird mortality shall continue to be documented in the problem areas per the avian reporting system to determine the effectiveness of the mortality reduction methods and to determine if new methods need to be developed.

**B-11a Prepare and implement a raven control plan.** A Raven Control Plan shall be prepared and implemented. The Raven Control Plan shall cover where the desert tortoise has potential to occur. The raven control plan shall include the use of raven perching/nesting deterrents (such as those manufactured by Prommel Enterprises, Inc. [[www.ZENAdesign.com](http://www.ZENAdesign.com)], Mission Environmental [[www.missionenviro.co.za](http://www.missionenviro.co.za)], or Kaddas Enterprises, Inc. [[www.kaddas.com](http://www.kaddas.com)]) and/or shall describe the procedure for obtaining a permit from the USFWS Law Enforcement Division to legally remove ravens. The plan shall identify the purpose of conducting raven control; provide training in how to identify raven nests and how to determine whether a nest belongs to a raven or a raptor species; describe the seasonal limitations on disturbing nesting raptors; and describe procedures for documenting the activities on an annual basis. The Applicant shall work with the USFWS until approval of a plan is obtained prior to the start of construction.

**B-12a Conduct maintenance activities outside the general avian breeding season.** The Applicant shall educate all maintenance workers about the sensitivity of biological resources associated with the project and the necessity to avoid unauthorized impacts to them.

In areas not cleared of vegetation in the prior two years, all vegetation clearing, except tree trimming or removal, shall take place between September 16 and February 14 (i.e., outside of the general avian breeding season of February 15 through September 15). Tree trimming or removal shall only take place between September 16 and December 31 (i.e., outside the raptor breeding season of January 1 through September 15).

Other maintenance activities shall occur outside the general avian breeding season where feasible. For other maintenance activities that cannot occur outside the above-listed breeding seasons, a qualified biologist shall work with a qualified acoustician to determine if a maintenance activity would meet or exceed the 60 dB(A) Leq hourly noise threshold where nesting territories of the

coastal California gnatcatcher, least Bell’s vireo, southwestern willow flycatcher, and burrowing owl occur. If the noise threshold would not be met or exceeded at the edge of their nesting territories, then maintenance may proceed. If the noise threshold would be met or exceeded at the edge of their nesting territories, pre-maintenance surveys for nests of these species shall be conducted by a qualified biologist (USFWS permitted biologist for gnatcatcher, vireo, and flycatcher) within 300 feet of the maintenance area no more than seven days prior to initiation of maintenance that would occur between February 15 and August 30 for the gnatcatcher, March 15 and September 15 for the vireo, April 15 and September 15 for the flycatcher, and February 1 and August 31 for the burrowing owl. If active nests are found, work may proceed provided that methods, determined by the qualified acoustician to be effective, are implemented to reduce noise below the threshold. These methods include, but are not limited to, turning off vehicle engines and other equipment whenever possible and/or installing a protective noise barrier between a nesting territory and maintenance activities. If the qualified acoustician determines that no methods would reduce noise to below the threshold, maintenance shall be deferred until the nestlings have fledged as determined the qualified biologist. Where noise-reducing methods are employed, active nests shall be monitored by the qualified biologist on a weekly basis until maintenance is complete or until the nestlings fledge, whichever comes first. The qualified biologist shall be responsible for documenting the results of the pre-maintenance nest surveys and the nest monitoring and for reporting these results to the Lead Agencies, other agencies with jurisdiction over the project, and Wildlife Agencies.

**Animal Burrows/Dens.** If any animal burrows or dens are identified during the pre-maintenance surveys for active bird nests, soil in a brush-clearing area shall be sufficiently dry before brush clearing to prevent damage to burrows or dens.

**B-12d Protect wildlife.** No wildlife, including rattlesnakes, may be harmed except to protect life and limb. Firearms shall be prohibited in all Project areas except for those used by security personnel.

## A.2 Visual Resources

**V-1a Reduce visibility of construction activities and equipment.** Construction sites and all staging and material and equipment storage areas including storage sites for excavated materials, and helicopter fly yards shall be appropriately located away from areas of high public visibility. If visible from nearby roads, residences, public gathering areas, or recreational areas, facilities, or trails, construction sites and staging areas and fly yards shall be visually screened using temporary screening fencing. Fencing will be of an appropriate design and color for each specific location. Additionally, construction in areas visible from recreation facilities and areas during holidays and periods of heavy recreational use shall be avoided. The Applicant shall submit final construction plans demonstrating compliance with this measure to the Lead Agencies for review and approval at least 60 days prior to the start of construction. Where the project crosses lands administered by other public agencies construction plans shall also be submitted to those agencies for review and approval within the same 60-day timeframe.

**V-1b Reduce construction night lighting impacts.** The Applicant shall design and install all lighting at construction and storage yards and staging areas and fly yards such that light bulbs and reflectors are not visible from public viewing areas; lighting does not cause reflected glare; and illumination of the project facilities, vicinity, and nighttime sky is minimized. The Applicant shall submit a Construction Lighting Mitigation Plan to the Lead Agencies and other agencies with jurisdiction over the project for review and approval at least 90 days prior to the start of construction or the ordering of any exterior lighting fixtures or components, whichever comes first. The Applicant shall not order any exterior lighting fixtures or components until the

Construction Lighting Mitigation Plan is approved by the reviewing agency. The Plan shall include but is not necessarily limited to the following:

- Lighting shall be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light sources is shielded to prevent light trespass outside the project boundary
- All lighting shall be of minimum necessary brightness consistent with worker safety
- High illumination areas not occupied on a continuous basis shall have switches or motion detectors to light the area only when occupied.

**V-1c Prohibit construction marking of natural features.** No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.

**V-2a Reduce in-line views of land scars.** Construct access or spur roads at appropriate angles from the originating, primary travel facilities to minimize extended, in-line views of newly graded terrain. Contour grading should be used where possible to better blend graded surfaces with existing terrain. All proposed new access roads shall be evaluated for their visibility from sensitive viewing locations prior to final design. Prior to final design, the Applicant shall consult with a visual resources specialist representing the Lead Agencies and a qualified biologist to identify the following:

- Definition of access roads with sensitive viewing areas from which visibility of access roads is a concern.
- Approximate location and length of alternative access road routes if straight line roads are not used. Define habitat affected and steepness of terrain for consideration of habitat and erosion impacts. The biologist and visual resources specialist shall confirm that the overall impacts of the alternate access road are less than that of the original access road design.
- “Drive and crush” access is a feasible measure for avoiding access road scars (i.e., no grading or vegetation removal is required). If this means of access is to be used, the Applicant shall define frequency of driving and vehicle types such that a biologist confirms that vegetation would be likely to recover.
- A table shall be submitted to the Lead Agencies for review and approval at least 60 days before the start of construction to document towers for which this measure is applied, and the proposed resolution for each access road (i.e., retain straight line roads due to greater impacts from alternative routes, use “drive and crush” access, or develop alternate access road route).

The Applicant shall submit final construction plans demonstrating compliance with this measure to the Lead Agencies and other agencies with jurisdiction over the project for review and approval at least 60 days prior to the start of construction.

**V-2b Reduce visual contrast from unnatural vegetation lines.** In those areas where views of land scars are unavoidable, the boundaries of disturbed areas shall be aggressively revegetated to create a less distinct and more natural-appearing line to reduce visual contrast. Furthermore, all graded roads and areas not required for on-going operation, maintenance, or access shall be returned to pre-construction conditions. In those cases where potential public access is opened by construction routes, the Applicant shall create barriers or fences to prevent public access and patrol construction routes to prevent vandalized access and litter clean-up until all vegetation removed returns to its pre-project state. The Applicant shall submit final construction and

restoration plans demonstrating compliance with this measure to the Lead Agencies and other agencies with jurisdiction over the project for review and approval at least 60 days prior to the start of construction.

**V-2c Reduce color contrast of land scars.** For land areas where views of land scars from sensitive public viewing locations are unavoidable, disturbed soils shall be treated with Eonite or similar treatments to reduce the visual contrast created by the lighter-colored disturbed soils with the darker vegetated surroundings (Eonite and Permeon are commercially available chemical treatments that “age” or oxidize rock and are used specifically for coloring concrete or rock surfaces to tone down glare and contrast and simulate naturally occurring desert varnish). The Applicant will consult with the Authorized Officer (as determined by the Lead Agencies as appropriate) on a site-by-site basis for the use of Eonite. The Applicant shall submit final construction and restoration plans demonstrating compliance with this measure to the Lead Agencies for review and approval at least 60 days prior to the start of construction.

**V-2d Minimize vegetation removal.** Only the minimum amount of vegetation necessary for the construction of structures and facilities will be removed. Topsoil located in areas containing sensitive habitat shall be conserved during excavation and reused as cover on disturbed areas to facilitate re-growth of vegetation.

**V-4a Reduce visual contrast of towers and conductors.** The following design measures shall be applied to all new structure locations, conductors, and re-conducted spans, in order to reduce the degree of visual contrast caused by the new facilities:

- All new conductors and re-conducted spans are to be non-specular in design in order to reduce conductor visibility and visual contrast.
- All proposed new access roads shall be evaluated for their visibility from sensitive viewing locations prior to final design. Sensitive viewing locations have been defined as campgrounds, trailheads, trails, wilderness areas, backcountry roads, heavily traveled roads, and overlooks. Access roads of concern are those that would be visible as they directly approach existing or proposed towers in a straight line from locations immediately downhill of the structures. Prior to final design, the Applicant shall consult with a visual resources specialist representing the Lead Agencies and a qualified biologist to identify the following:
  - Definition of towers with sensitive viewing areas from which visibility of access roads is a concern.
  - Approximate location and length of alternative access road routes if straight line roads are not used. Define habitat affected and steepness of terrain for consideration of habitat and erosion impacts. The biologist and visual resources specialist shall confirm that the overall impacts of the alternate access road are less than that of the original access road design.
  - “Drive and crush” access is a feasible measure for avoiding access road scars (i.e., no grading or vegetation removal is required). If this means of access is to be used, the Applicant shall define frequency of driving and vehicle types such that a biologist confirms that vegetation would be likely to recover.
  - A table shall be submitted to the Lead Agencies for review and approval at least 60 days before the start of construction to document towers for which this measure is applied, and the proposed resolution for each tower (i.e., retain straight line roads due to greater impacts from alternative routes, use “drive and crush” access, or develop alternate access road route).

**V-4b Use non-specular design to reduce conductor visibility and visual contrast.** The Applicant will use dulled metal finish transmission structures and non-specular conductors in visually sensitive areas.

### A.3 Land Use

**L-1a Prepare Construction Notification Plan.** Forty-five days prior to construction, the Applicant shall prepare and submit a Construction Notification Plan to the Lead Agencies for approval. The Plan shall identify the procedures the Applicant will use to inform property and business owners of the location and duration of construction, identify approvals that are needed prior to posting or publication of construction notices, and include text of proposed public notices and advertisements. The plan shall address at a minimum the following components:

- **Public notice mailer.** A public notice mailer shall be prepared and mailed no less than 15 days prior to construction. The notice shall identify construction activities that would restrict, block, remove parking, or require a detour to access existing residential properties, retail and commercial businesses, wilderness and recreation facilities, and public facilities (e.g., schools and memorial parks). The notice shall state the type of construction activities that will be conducted, and the location and duration of construction, including all helicopter activities. The Applicant shall mail the notice to all residents or property owners within 1,000 feet of the right-of-way, any property owners or tenants that could be impacted by construction activities and specific public agencies with facilities that could be impacted by construction. If construction delays of more than seven days occur, an additional notice shall be prepared and distributed.
- **Newspaper advertisements.** Fifteen days prior to construction, within a route segment, notices shall be placed in local newspapers and bulletins, including Spanish language newspapers and bulletins. The notice shall state when and where construction will occur and provide information on the public liaison person and hotline identified below. If construction is delayed for more than seven days, an additional round of newspaper notices shall be placed to discuss the status and schedule of construction.
- **Public venue notices.** Thirty days prior to construction, notice of construction shall be posted at public venues such as trail crossings, rest stops, desert centers, resource management offices (e.g., Bureau of Land Management field offices, State Park offices and campgrounds), and other public venues to inform residents and visitors to the purpose and schedule of construction activities. For public trail closures, the Applicant shall post information on the trail detour at applicable resource management offices and post the notice on the trail within two miles of the detour. For recreation facilities, the notice shall be posted along the access routes to known recreational destinations that would be restricted, blocked, or detoured and shall provide information on alternative recreation areas that may be used during the closure of these facilities.
- **Public liaison person and toll-free information hotline.** The Applicant shall identify and provide a public liaison person before and during construction to respond to concerns of neighboring property owners about noise, dust, and other construction disturbance. Procedures for reaching the public liaison officer via telephone or in person shall be included in notices distributed to the public. The Applicant shall also establish a toll-free telephone number for receiving questions or complaints during construction and shall develop procedures for responding to callers. Procedures for handling and responding to calls shall be addressed in the Construction Notification Plan.

- L-1b Notify property owners and provide access.** To facilitate access to properties obstructed by construction activities, the Applicant will notify property owners and tenants in advance of construction activities. The Applicant will provide alternative access if feasible.
- L-1c Flag ROW boundary and environmentally sensitive areas.** The limits of construction within the ROW will typically be predetermined, with activity restricted to and confined within those limits. The ROW boundary and limits of construction activity will be flagged in environmentally sensitive areas to alert construction personnel that disturbance to those areas will be minimized or avoided.
- L-2a Revise project elements to minimize land use conflicts.** At least 90 days prior to completing final transmission line design for the approved route, the Applicant shall notify landowners of parcels through which the alignment would pass regarding the specific location of the ROW, individual towers, staging areas, pull sites, access roads, or other facilities associated with the project that would occur on the subject property or within 1,000 feet of the property. The notified parties shall be provided at least 30 days in which to identify conflicts with any existing structures or planned development on the subject property and to work with the Applicant to identify potential reroutes of the alignment that would be mutually acceptable to the Applicant and the landowner. Property owners whose land may be divided into potentially uneconomic parcels shall be afforded this same opportunity, even if development plans have not been established. The Applicant shall endeavor to accommodate these reroutes only to the extent that they are reasonable and feasible, do not create a substantial increase in cost, and do not create adverse impacts to resources or to other properties that would be greater in magnitude than impacts that would occur from construction and operation of the alignment as originally planned.

At or before the time property owners are notified and based on the Applicant's own review of the alignment and facilities, the Applicant shall provide the Lead Agencies a written report identifying properties that are suspected of having a land use conflict as described above. This report shall identify and characterize existing buildings within the ROW and residences or occupied structures within or adjacent to the ROW, with which the alignment or other permanent facilities may conflict.

## A.4 Wilderness and Recreation

- WR-1a Coordinate construction schedule and activities with the authorized officer for the recreation area.** No less than 60 days prior to construction, the Applicant shall coordinate construction activities and the project construction schedule with the authorized officer for the recreation areas impacted. The Applicant shall schedule construction activities to avoid heavy recreational use periods in coordination with and at the discretion of the authorized officer. The Applicant shall locate construction equipment to avoid temporary preclusion of recreation areas in accordance with the recommendation of the authorized officer. The Applicant shall document its coordination efforts with the authorized officer and provide this documentation to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.

**WR-1b Provide temporary detours for trail users.** No less than 60 days prior to construction, the Applicant shall coordinate with the authorized officer of the trails listed below to establish temporary detours of the trails to avoid construction area hazards, if the trail is deemed unsafe to use during construction. Should new trail segments be constructed as detours during construction, the temporary new trail segments would be sited to avoid sensitive resources, in coordination with the authorized officer of the trail or recreation area, and would be restored to pre-construction condition by the Applicant when construction is complete, if required by the authorized officer of the trail or recreation area. The Applicant shall post a public notice of the temporary trail closure and information on the trail detour. The Applicant shall document its coordination efforts with the authorized officer and submit this documentation to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.

**WR-1c Coordinate with local agencies to identify alternative recreation areas.** The Applicant shall coordinate with the authorized officer for the applicable federal, State, or local parks and recreational facilities at least 60 days before construction in order to identify alternative recreation facilities that may be used by the public during construction. The Applicant shall post a public notice at recreation facilities that are to be closed or where access would be limited during project construction. The Applicant shall document its coordination efforts with the parks and recreation departments and provide this documentation to the Lead Agencies and all affected jurisdictions 30 days prior to construction.

**WR-3a Coordinate tower and road locations with the authorized officer for the recreation area.** Where the projects cross recreation areas, the Applicant shall coordinate with the authorized officer for the recreation area to determine specific tower site and spur road locations in order to minimize impacts to recreational resources. If it is not feasible to site structures outside of a park/preserve, compensation shall be required for permanent impacts (i.e., structure footings, access roads not dually used as trails) to park/preserve land at a 1:1 ratio.

In consultation with the authorized officer of the trail or recreation area, access roads shall not be located on trails unless the authorized officer determines that the construction of new access roads would result in greater impacts than modifying the trail for use as an access road. If it is not feasible to site transmission structures off of a trail, the Applicant shall provide full funding for relocation of trail segments, including planning and trail construction, at location(s) identified by the authorized officer of the trail or recreation area. Trail segment relocation shall maintain the connectivity of regional and community trails.

This coordination shall occur no less than 60 days prior to the start of construction. The Applicant shall document its coordination with the authorized officer and shall submit this documentation to the Lead Agencies at least 30 days prior to project construction.

## A.5 Agriculture

**AG-1a Avoid interference with agricultural operations.** The Applicant shall coordinate with property owners and tenants to ensure that project construction will be conducted so as to avoid or minimize interference with agricultural operations. Agricultural operations include, but are not limited to, the use of farm vehicles and equipment, access to property; water delivery, drainage, and irrigation.

**AG-1b Restore compacted soil.** The Applicant shall restore soils compacted or disturbed such as by excavation during construction by conferring with the property owner or tenant to identify and then implement a mutually agreed means to restore such soils. Restoration actions may include, but are not be limited to, disking, plowing, removal of excavated soil, or other suitable restoration methods.

**AG-1c Coordinate with grazing operators.** The Applicant shall coordinate with grazing operators to ensure that agricultural productivity and animal welfare are maintained both during and after construction to the maximum extent feasible. Coordination efforts will address issues including, but not necessarily limited to:

- Interference with access to water (e.g., provide alternate methods for livestock access to water)
- Impairment of cattle movements (e.g., provide alternate routes; reconfigure fencing/gates)
- Removal and replacement of fencing (e.g., during construction install temporary fencing/barriers, as appropriate, and following construction restore equal or better fencing to that which was removed or damaged)

## A.6 Cultural Resources

**C-1a Inventory and evaluate cultural resources in Final APE.** Prior to construction and all other surface disturbing activities, the Applicant shall have conducted and submitted for approval by the Lead Agencies an inventory of cultural resources within the project's final Areas of Potential Effect.<sup>5</sup> This survey will supplement inventories conducted for the EIS/EIR and shall satisfy Section 106 requirements for inventory of historic properties within all Areas of Potential Effect. The nature and extent of this inventory shall be determined by the Lead Agencies in consultation with the appropriate State Historic Preservation Officer (SHPO) and other land-managing agencies (e.g., State Parks, U.S. Forest Service, Bureau of Indian Affairs, etc.) and shall be based upon project engineering specifications and in accordance with the Secretary of the Interior's Standards and Guidelines (Secretary's Standards) (36 CFR 61).

A report documenting results of this inventory shall be filed with appropriate State repositories and local governments. As part of the inventory report, the Applicant shall evaluate the significance of all potentially affected cultural resources on the basis of surface observations. Evaluations shall be conducted by professionals meeting the Secretary's Standards and in accordance with those Standards, to provide recommendations with regard to their eligibility for the NRHP, CRHR, or local registers. Preliminary determinations of NRHP eligibility will be made by the BLM, in consultation with appropriate agencies and local governments, and the SHPO.

As part of the inventory, the Applicant shall conduct field surveys of sufficient nature and extent to identify cultural resources that would be affected by solar power plant construction, trenching for underground transmission lines, access road installation, and transmission line construction and operation. At a minimum, field surveys shall be conducted along newly proposed access roads, new construction yards, new tower sites, and any other projected areas of potential ground disturbance outside of the previously surveyed potential impact areas. Site-specific field surveys also shall be undertaken at all projected areas of impact within the previously surveyed corridor that coincide with previously recorded resource locations. The selected right-of-way shall be staked prior to the cultural resource field surveys.

**C-1b Avoid and protect potentially significant resources.** Where feasible, potentially register-eligible resources and register-eligible resources shall be protected from direct project impacts by project redesign; complete avoidance of impacts to such resources shall be the preferred protection strategy. On the basis of preliminary National Register of Historic Places (NRHP)

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<sup>5</sup> Area of Potential Effect is the horizontal and vertical extent of anticipated impacts that could affect historic properties. This includes direct impacts (physical disturbance from any project activity during or after construction) and indirect impacts, such as noise, vibration, visual intrusion, or erosion.

eligibility assessments (Mitigation Measure C-1a) or previous determinations of resource eligibility, the Lead Agencies, in consultation with the SHPO, may request the relocation of the line, ancillary facilities, or temporary facilities or work areas, if any, where relocation would avoid or reduce damage to cultural resource values.

Where the Lead Agencies, in consultation with the Applicant, decide that potentially NRHP- and/or CRHR-eligible cultural resources cannot be protected from direct impacts by project redesign, or that avoidance is not feasible, the Applicant shall undertake additional studies to evaluate the resources' NRHP- and/or CRHR-eligibility and to recommend further mitigative treatment. The nature and extent of this evaluation shall be determined by the Lead Agencies and the SHPO and shall be based upon final project engineering specifications. Evaluations will be based on surface remains, subsurface testing, archival and ethnographic resources, and in the framework of the historic context and important research questions of the project area. Results of those evaluation studies and recommendations for mitigation of project effects shall be incorporated into a Historic Properties Treatment Plan consistent with Mitigation Measure C-1c (Develop and implement Historic Properties Treatment Plan).

All potentially NRHP- and/or CRHR-eligible resources (as determined by the Lead Agencies, in consultation with the SHPO) that will not be affected by direct impacts, but are within 50 feet of direct impact areas, will be designated as Environmentally Sensitive Areas (ESAs) to ensure that construction activities do not encroach onsite peripheries. Protective fencing, or other markers (after approval by the Lead Agencies), shall be erected and maintained to protect ESAs from inadvertent trespass for the duration of construction in the vicinity. ESAs shall not be identified specifically as cultural resources. A monitoring program shall be developed as part of a Historic Properties Treatment Plan and implemented by the Applicant to ensure the effectiveness of ESA protection (as detailed in Mitigation Measure C-1e).

**C-1c Develop and implement Historic Properties Treatment Plan.** Upon approval of the inventory report and the National Register of Historic Places (NRHP)-eligibility and CRHR-eligibility evaluations consistent with Mitigation Measures C-1a (Inventory and evaluate cultural resources in Final APE) and C-1b (Avoid and protect potentially significant resources), the Applicant shall prepare and submit for approval a Historic Properties Treatment Plan (HPTP) for register-eligible cultural resources to avoid or mitigate identified potential impacts. Treatment of cultural resources shall follow the procedures established by the Advisory Council on Historic Preservation for compliance with Section 106 of the National Historic Preservation Act and other appropriate State and local regulations. Avoidance, recordation, and data recovery will be used as mitigation alternatives; avoidance and protection shall be the preferred strategy. The HPTP shall be submitted to the Lead Agencies for review and approval.

As part of the HPTP, the Applicant shall prepare a research design and a scope of work for evaluation of cultural resources and for data recovery or additional treatment of NRHP- and/or CRHR-eligible sites that cannot be avoided. Data recovery on most resources would consist of sample excavation and/or surface artifact collection, and site documentation. A possible exception would be a site where burials, cremations, or sacred features are discovered that cannot be avoided (see Mitigation Measure C-2).

The HPTP shall define and map all known NRHP- and/or CRHR-eligible properties in or within 50 feet of all project APEs and shall identify the cultural values that contribute to their NRHP- and/or CRHR-eligibility. The HPTP shall also detail how NRHP- and/or CRHR-eligible properties will be marked and protected as ESAs (in accordance with Mitigation Measure C-1b) during construction.

The HPTP shall also define any additional areas that are considered to be of high-sensitivity for discovery of buried register-eligible cultural resources, including burials, cremations, or sacred

features. This sensitivity evaluation shall be conducted by an archaeologist who meets the Secretary's Standards and who takes into account geomorphic setting and surrounding distributions of archaeological deposits. The HPTP shall detail provisions for monitoring construction in these high-sensitivity areas for proper implementation of Mitigation Measures C-1e and C-3a. It shall also detail procedures for halting construction, making appropriate notifications to agencies, officials, and Native Americans, and assessing register-eligibility in the event that unknown cultural resources are discovered during construction. For all unanticipated cultural resource discoveries, the HPTP shall detail the methods, consultation procedures, and timelines for assessing register-eligibility, formulating a mitigation plan, and implementing treatment. Mitigation and treatment plans for unanticipated discoveries shall be approved by the Lead Agencies, other appropriate agencies and local governments, appropriate Native Americans, and the SHPO prior to implementation.

The HPTP shall also identify all historic built environment resources (structures, roads, dams, etc.) that would be affected indirectly by visual intrusion of the solar projects on qualities that contribute to their register eligibility. The HPTP shall include an identification effort focused on identifying any such resources. The scope of this identification effort shall be in accordance with 36 CFR 800, which requires a reasonable effort to identify potentially NRHP-eligible resources that would be adversely affected by indirect project impacts. The HPTP shall also detail the treatment for each affected resource that will minimize those long-term visual impacts (as detailed in Mitigation Measure C-6a).

The HPTP shall include provisions for analysis of data in a regional context, reporting of results within one year of completion of field studies, curation of artifacts (except from private land) and data (maps, field notes, archival materials, recordings, reports, photographs, and analysts' data) at a facility that is approved by BLM, and dissemination of reports to local and State repositories, libraries, and interested professionals. The BLM will retain ownership of artifacts collected from BLM managed lands. The Applicant shall attempt to gain permission for artifacts from privately held land to be curated with the other project collections. The HPTP shall specify that archaeologists and other discipline specialists conducting the studies meet the Secretary's Standards (per 36 CFR 61).

**C-1d Conduct data recovery to reduce adverse effects.** If NRHP- and/or CRHR-eligible resources, as determined by the BLM and SHPO, cannot be protected from direct impacts, data-recovery investigations shall be conducted by the Applicant to reduce adverse effects to the characteristics of each property that contribute to its NRHP- and/or CRHR-eligibility. For sites eligible under Criterion (d), significant data would be recovered through excavation and analysis. For properties eligible under Criteria (a), (b), or (c), data recovery may include historical documentation, photography, collection of oral histories, architectural or engineering documentation, preparation of a scholarly work, or some form of public awareness or interpretation. Data gathered during the evaluation phase studies and the research design element of the Historic Properties Treatment Plan (HPTP) shall guide plans and data thresholds for data recovery; treatment will be based on the resource's research potential beyond that realized during resource recordation and evaluation studies. If data recovery is necessary, sampling for data-recovery excavations will follow standard statistical sampling methods, but sampling will be confined, as much as possible, to the direct impact area. Data-recovery methods, sample sizes, and procedures shall be detailed in the HPTP consistent with Mitigation Measure C-1c (Develop and implement Historic Properties Treatment Plan) and implemented by the Applicant only after approval by the Lead Agencies. Following any field investigations required for data recovery, the Applicant shall document the field studies and findings, including an assessment of whether adequate data were recovered to reduce adverse project effects, in a brief field closure report. The field closure report shall be submitted to the Lead Agencies for their review and approval, as well as to appropriate State repositories, local

governments, and other appropriate agencies. Construction work within 100 feet of cultural resources that require data-recovery fieldwork shall not begin until authorized by the Lead Agencies, as appropriate, to ensure that impacts to known significant archaeological deposits are adequately mitigated.

**C-1e Monitor construction at known ESAs.** The Applicant shall implement full-time archaeological monitoring by a professional archaeologist during ground-disturbing activities at all cultural resource Environmentally Sensitive Areas (ESAs). These locations and their protection boundaries shall be defined and mapped in the HPTP.

Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of historical and prehistoric resources that could be encountered within the project, and under direct supervision of a principal archaeologist. The qualifications of the principal archaeologist and archaeological monitors shall be approved by the Lead Agencies.

A Native American monitor may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with Native American tribes. The monitoring plan in the HPTP shall indicate the locations where Native American monitors will be required and shall specify the tribal affiliation of the required Native American monitor for each location. The Applicant shall retain and schedule any required Native American monitors.

Compliance with and effectiveness of any cultural resources monitoring required by an HPTP shall be documented by the Applicant in a monthly report to be submitted to the Lead Agencies for the duration of project construction. In the event that cultural resources are not properly protected by ESAs, all project work in the immediate vicinity shall be diverted to a buffer distance determined by the archaeological monitor until authorization to resume work has been granted by the Lead Agencies.

The Applicant shall notify the BLM of any damage to cultural resource ESAs. If such damage occurs, the Applicant shall consult with the Lead Agencies to mitigate damages and to increase effectiveness of ESAs. At the discretion of the Lead Agencies, such mitigation may include, but not be limited to, modification of protective measures, refinement of monitoring protocols, data-recovery investigations, or payment of compensatory damages in the form of non-destructive cultural resources studies or protection within or outside the license area, at the discretion of the BLM.

**C-1f Train construction personnel.** All construction personnel shall be trained regarding the recognition of possible buried cultural remains and protection of all cultural resources, including prehistoric and historic resources during construction, prior to the initiation of construction or ground-disturbing activities. The Applicant shall complete training for all construction personnel and retain documentation showing when training of personnel was completed. Training shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials, including Native American burials. Training shall inform all construction personnel that Environmentally Sensitive Areas (ESAs) must be avoided and that travel and construction activity must be confined to designated roads and areas. All personnel shall be instructed that unauthorized collection or disturbance of artifacts or other cultural materials on or off the right-of-way by the Applicant, his representatives, or employees will not be allowed. Violators will be subject to prosecution under the appropriate State and federal laws and violations will be grounds for removal from the project. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order.

The following issues shall be addressed in training or in preparation for construction:

- All construction contracts shall require construction personnel to attend training so they are aware of the potential for inadvertently exposing buried archaeological deposits, their

responsibility to avoid and protect all cultural resources, and the penalties for collection, vandalism, or inadvertent destruction of cultural resources.

- The Applicant shall provide training for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential ESA, and procedures and notifications required in the event of discoveries by project personnel or archaeological monitors. Supervisors shall also be briefed on the consequences of intentional or inadvertent damage to cultural resources. Supervisory personnel shall enforce restrictions on collection or disturbance of artifacts or other cultural resources.

**C-2a Properly treat human remains.** All locations of known Native American human remains shall be avoided through project design and shall be protected by designation as ESAs. If the approved project route will affect sites known to contain human remains that cannot be avoided in their entirety during construction, the Applicant shall contact the California Native American Heritage Commission (NAHC). The NAHC will identify the Most Likely Descendant (MLD), within 48 hours, who will specify the preferred course of treatment in the event that additional human remains are discovered. The Applicant shall also contact the BLM and any additional land management agencies if the site is located on public lands administered by a State or federal agency other than the BLM. The Applicant shall follow all State and federal laws, statutes, and regulations that govern the treatment of human remains. The Applicant shall assist and support the BLM in all required government-to-government consultations with Native Americans and appropriate agencies and commissions, as requested by the BLM. The Applicant shall comply with and implement all required actions and studies that result from such consultations.

If human remains are discovered during construction, all work shall be diverted from the area of the discovery and the BLM authorized officer shall be informed immediately. The Applicant shall follow all State and federal laws, statutes, and regulations that govern the treatment of human remains. The Applicant shall assist and support the BLM in all required government-to-government consultations with Native Americans and appropriate agencies and commissions, as requested by the BLM. The Applicant shall comply with and implement all required actions and studies that result from such consultations, as directed by the BLM.

Although subject to the recommendations of the MLD, it is likely that the human remains would be respectfully removed by the MLD and/or qualified archaeologists and reinterred in an area not subject to impacts from the Proposed Project. The re-interment location may be identified as a nearby locale within ROW, or an offsite location may be selected. The Applicant shall assist and support the MLD in identifying, acquiring, and protecting the re-interment location.

**C-3a Monitor construction in areas of high sensitivity for buried resources.** The Applicant shall implement archaeological monitoring by a professional archaeologist during subsurface construction disturbance at all locations identified in the Historic Properties Treatment Plan (HPTP) as highly sensitive for buried prehistoric or historical archaeological sites or Native American human remains. These locations and their protection boundaries shall be defined and mapped in the HPTP. Intermittent monitoring may occur in areas of moderate archaeological sensitivity at the discretion of the Lead Agencies. Monitoring shall be conducted in accordance with procedures detailed in Mitigation Measure C-1e

Upon discovery of potential buried cultural materials by archaeologists or construction personnel, or damage to an ESA, work in the immediate area of the find shall be diverted and the Applicant's archaeologist notified. Once the find has been inspected and a preliminary assessment made, the Applicant's archaeologist will consult with the Lead Agencies, as appropriate, to make the necessary plans for evaluation and treatment of the find(s) or mitigation of adverse effects to ESAs, in accordance with the Secretary's Standards, and as specified in the HPTP.

**C-4a Complete consultation with Native American and other Traditional Groups.** The Applicant shall provide assistance to the lead federal agency to complete required government-to-government consultation with interested Native American tribes and individuals (Executive Memorandum of April 29, 1994 and Section 106 of the National Historic Preservation Act) and other Traditional Groups to assess the impact of the approved project on Traditional Cultural Properties or other resources of Native American concern, such as sacred sites and landscapes, or areas of traditional plant gathering for food, medicine, basket weaving, or ceremonial uses. As directed by the lead federal agency, the Applicant shall undertake required treatments, studies, or other actions that result from such consultation. Written documentation of the completion of all pre-construction actions shall be submitted by the Applicant and approved by the lead federal agency at least 30 days before commencement of construction activities. Actions that are required during or after construction shall be defined, detailed, and scheduled in the Historic Properties Treatment Plan and implemented by the Applicant, consistent with Mitigation Measure C-1c (Develop and implement Historic Properties Treatment Plan).

**C-5a Protect and monitor NRHP- and/or CRHR-eligible properties.** The Applicant shall design and implement a long-term plan to protect National Register of Historic Places (NRHP- and/or CRHR)-eligible sites from direct impacts of project operation and maintenance and from indirect impacts (such as erosion and access) that could result from the presence of the project. The plan shall be developed in consultation with the Lead Agencies to design measures that will be effective against project maintenance impacts, such as vegetation clearing and road and tower maintenance, and project-related vehicular impacts. The plan shall also include protective measures for NRHP- and/or CRHR-eligible properties within the transmission line corridor that will experience operational and access impacts as a result of the Proposed Project. Measures considered shall include restrictive fencing or gates, permanent access road closures, signage, stabilization of potential erosive areas, site capping, site patrols, and interpretive/educational programs, or other measures that will be effective for protecting NRHP- and/or CRHR-eligible properties. The plan shall be property specific and shall include provisions for monitoring and reporting its effectiveness and for addressing inadequacies or failures that result in damage to NRHP- and/or CRHR-eligible properties. The plan shall be submitted to the Lead Agencies and other appropriate land-managing agencies for review and approval at least 30 days prior to project operation.

Monitoring of sites selected during consultation with the Lead Agencies shall be conducted annually by a professional archaeologist for a period of five years. Monitoring shall include inspection of all site loci and defined surface features, documented by photographs from fixed photo monitoring stations and written observations. A monitoring report shall be submitted to the Lead Agencies and other appropriate land-managing agencies within one month following the annual resource monitoring. The report shall indicate any properties that have been affected by erosion or vehicle or maintenance impacts. For properties that have been impacted, the Applicant shall provide recommendations for mitigating impacts and for improving protective measures. After the fifth year of resource monitoring, the Lead Agencies or other land-managing agency, as appropriate, will evaluate the effectiveness of the protective measures and the monitoring program. Based on that evaluation, the Lead Agencies may require that the Applicant revise or refine the protective measures, or alter the monitoring protocol or schedule. If the Lead Agencies do not authorize alteration of the monitoring protocol or schedule, those shall remain in effect for the duration of project operation.

## A.7 Paleontological Resources

**PAL-1a Inventory and evaluate paleontological resources in the Final APE.** Prior to construction, the Applicant shall conduct and submit to the Lead Agencies, and other involved land-managing

agencies for approval an inventory of significant paleontological resources within the affected area based on field surveys of areas identified as marginal through high or undetermined paleontological sensitivity potential.

**PAL-1b Develop Paleontological Monitoring and Treatment Plan.** Following completion and approval of the paleontological resources inventory and prior to construction, the Applicant shall prepare and submit to the Lead Agencies, and other involved land-managing agencies for approval a Paleontological Monitoring Treatment Plan (Plan). The plan shall be designed by a Qualified Paleontologist and shall be based on Society of Vertebrate Paleontology (SVP) guidelines and meet all regulatory requirements. The qualified paleontologist shall have a Master's Degree or Ph.D. in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques. The Plan shall identify construction impact areas of moderate to high sensitivity for encountering significant resources and the depths at which those resources are likely to be encountered. The Plan shall outline a coordination strategy to ensure that a qualified paleontological monitor will conduct full-time monitoring of all ground disturbance in sediments determined to have a moderate to high sensitivity. Sediments of low, marginal, and undetermined sensitivity shall be monitored on a part-time basis (as determined by the Qualified Paleontologist) Sediments with zero sensitivity will not require paleontological monitoring. The Qualified Monitor shall have a B.A. in Geology or Paleontology, and a minimum of one year of monitoring experience in local sediments. The Plan shall detail the significance criteria to be used to determine which resources will be avoided or recovered for their data potential. The Plan shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. The Plan shall specify that all paleontological work undertaken by the Applicant on public land shall be carried out by qualified paleontologists with the appropriate current permits, including, but not limited to a Paleontological Resources Use Permit (for work on public lands administered by BLM) and a Paleontological Collecting Permit (for work on lands administered by California Department of Parks and Recreation). Notices to proceed will be issued by the Lead Agencies, and other agencies with jurisdiction, following approval of the Paleontological Monitoring and Treatment Plan.

**PAL-1c Monitor construction for paleontology.** Based on the paleontological sensitivity assessment and Paleontological Monitoring and Treatment Plan consistent with Mitigation Measure PAL-1b (Develop Paleontological Monitoring and Treatment Plan), the Applicant shall conduct full-time construction monitoring by the qualified paleontological monitor in areas determined to have moderate to high paleontological sensitivity. Sediments of low, marginal undetermined sensitivity shall be monitored by a qualified paleontological monitor on a part-time basis (as determined by the Qualified Paleontologist). Construction activities shall be diverted when data recovery of significant fossils is warranted, as determined by the Qualified Paleontologist

**PAL-1d Conduct paleontological data recovery.** If avoidance of significant paleontological resources is not feasible or appropriate based on project design, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) shall be carried out by the Applicant, in accordance to the approved Treatment Plan per Mitigation Measure PAL-1b (Develop Paleontological Monitoring and Treatment Plan).

**PAL-1e Train construction personnel.** Prior to the initiation of construction or ground-disturbing activities, all construction personnel shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. The Applicant shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of paleontological materials. Training shall inform all construction personnel that Environmentally Sensitive Areas

(ESAs) ESAs include areas determined to be paleontologically sensitive as defined on the paleontological sensitivity maps for the project, and must be avoided and that travel and construction activity must be confined to designated roads and areas. All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or off the right-of-way by the Applicant, his representatives, or employees will not be allowed. Violators will be subject to prosecution under the appropriate State and federal laws and violations will be grounds for removal from the project. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction:

- All construction contracts shall include clauses that require construction personnel to attend training so they are aware of the potential for inadvertently exposing subsurface paleontological resources, their responsibility to avoid and protect all such resources, and the penalties for collection, vandalism, or inadvertent destruction of paleontological resources.
- The Applicant shall provide a background briefing for supervisory personnel describing the potential for exposing paleontological resources, the location of any potential ESAs, and procedures and notifications required in the event of discoveries by project personnel or paleontological monitors. Supervisory personnel shall enforce restrictions on collection or disturbance of fossils.
- Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be diverted and the Applicant's paleontologist notified. Once the find has been inspected and a preliminary assessment made, the Applicant's paleontologist will notify the Lead Agencies, and other appropriate land managers and proceed with data recovery in accordance with the approved Treatment Plan consistent with Mitigation Measure PAL-1b (Develop Paleontological Monitoring and Treatment Plan).

## A.8 Noise

**N-1a Implement Best Management Practices for construction noise.** The Applicant shall comply with local noise rules, standards, and/or ordinances by implementing the following noise-suppression techniques and variance standards set by local authorities. The Applicant shall apply for and obtain a variance for construction activities that must occur outside of the daytime hours allowed by local ordinances or within 200 feet of noise-sensitive receptors. At a minimum, the Applicant shall employ the following noise-suppression techniques to avoid possible violations of local rules, standards, and ordinances:

- Confine construction noise to daytime, weekday hours (e.g., 7:00 a.m. to 7:00 p.m.) or an alternative schedule established by the local jurisdiction or land use manager
- On construction equipment, use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer
- Install temporary sound walls or acoustic blankets to shield adjacent residences. These sound walls or acoustic blankets shall have a height of no less than 8 feet, a Sound Transmission Class (STC) of 27 or greater, and a surface with a solid face from top to bottom without any openings or cutouts
- Route construction traffic away from residences and schools, where feasible

- Minimize unnecessary construction vehicle use and idling time. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. A “common sense” approach to vehicle use shall be applied; if a vehicle is not required for use immediately or continuously for construction activities, its engine shall be shut off. (Note: certain equipment, such as large diesel-powered vehicles, require extended idling for warm-up and repetitive construction tasks.)

**N-3a Perform Operational Noise Study.** As part of facility design, an Operational Noise Study shall be conducted to determine the potential noise levels to be experienced by residents located within the reservation lands and along the boundaries of the reservation and BLM lands in which the planned solar projects would be located. The analysis shall be based on the planned siting of the solar facilities. The Operational Noise Study shall be reviewed and approved by the County prior to land use clearance.

**N-3b Incorporate noise reduction features with power plant design.** Power plant design and implementation shall include noise reduction and control design features to ensure that operation of the project will meet the noise levels established by the local jurisdictions, while accounting for ambient noise conditions. The design shall ensure that routine operation of the power plant does not exceed the existing nighttime background noise level at any of the closest noise-sensitive receptors by more than 5 dB.

**N-3c Verify proper power plant noise control.** A noise survey shall be performed within 90 days of the startup of commercial operations to confirm that the modeled noise levels are met. Any deficiencies shall be noted, and a schedule to correct them shall be developed. The survey shall be used to confirm that routine operation of the power plant does not exceed the existing nighttime background noise level at any of the closest noise-sensitive receptors by more than 5 dB.

## A.9 Transportation and Traffic

**T-1a Restrict lane closures.** The Applicant shall restrict all necessary lane closures or obstructions on major roadways associated with overhead or underground construction activities to off-peak periods in congested areas to reduce traffic delays. Lane closures must not occur between 6:00 and 9:30 a.m. and between 3:30 and 6:30 p.m., unless otherwise directed in writing by the responsible public agency issuing an encroachment permit.

**T-1b Prepare detour plans.** Detour plans shall be submitted to the counties, Caltrans, and/or other appropriate jurisdiction. Should a Right-of-Entry (ROE) permit be required for any construction and maintenance activities, this will be obtained by the Applicant.

**T-1c Obtain required permits.** The Applicant shall obtain required permits for the temporary lane closures from the appropriate jurisdiction(s) prior to any construction activities.

**T-2a Coordinate with Emergency Service Providers.** The Applicant shall coordinate in advance with emergency service providers to avoid restricting movements of emergency vehicles. The counties and cities will then notify respective police, fire, ambulance and paramedic services. The Applicant shall notify counties and cities of the proposed locations, nature, timing and duration of any construction activities and advise of any access restrictions that could impact their effectiveness.

**T-4a Repair damaged roads.** If damage to roads occurs as a result of project construction or construction vehicle traffic, the Applicant shall restore damaged roadways at their own expense under the direction of the affected public agencies to ensure that any impacts are adequately repaired. Roads disturbed by construction activities or construction vehicles shall be properly

restored to ensure long-term protection of road surfaces. Said measures shall be incorporated into an access agreement/easement with the applicable governing agency prior to construction. Prior to construction, the Applicant will determine with the governing agency the appropriate method for documenting pre- and post-construction conditions.

- T-5a Obtain railroad right-of-way permit.** The Applicant shall obtain ROW encroachment permits for entering and/or construction on or near Arizona and California Railroad and any other railroad ROW entered.
- T-6a Prepare Construction Transportation Management Plan.** The Applicant shall prepare a Construction Transportation Management Plan (CTMP) to address traffic and transportation issues related to project construction. The CTMP shall describe alternate traffic routes, timing of worker commutes and material deliveries, the need for lane and road closures, the use of helicopters, plans for construction worker parking and transportation to work sites, methods for keeping roadways clean, and other methods for reducing adverse construction-related traffic impacts on regional and local roadways. The plan must comply with the requirements of the respective county and must be submitted to the respective counties and Caltrans for approval prior to commencing construction activities.

## A.10 Public Health and Safety – Environmental Contamination

- P-1a Implement Environmental Monitoring Program.** An environmental monitoring program will be implemented by the Applicant or its contractors to ensure that the plans defined in P-1c (personnel trained in proper use and safety procedures for the chemicals used), P-1d (personnel trained in refueling of vehicles), P-1e (preparation of environmental safety plans including spill prevention and response plan), P-1f (General Contractor environmental/health and safety personnel), and P-1g (storage and disposal of hazardous and solid waste) are followed throughout the period of construction. The Applicant will designate an Environmental Field Representative, who will be onsite to observe, enforce, and document adherence to the plans for all construction activities.
- P-1b Maintain emergency spill supplies and equipment.** Hazardous material spill kits will be maintained onsite by the Applicant or its contractors for response to small spills. This shall include oil-absorbent material, tarps, and storage drums to be used to contain and control any minor releases. Emergency spill supplies and equipment will be kept adjacent to all areas of work and in staging areas, and will be clearly marked. Detailed information for responding to accidental spills and for handling any resulting hazardous materials will be provided in the project's Spill Response Plan defined in P-1e.
- P-1c Personnel trained in proper use and safety procedures for the chemicals used.** All personnel involved in using hazardous materials shall be trained in the proper use and safety procedures for the chemical and provided with the necessary Personal Protection Equipment (PPE). A Hazard Communication (HAZCOM) Plan with Material Safety Data Sheets on all hazardous materials used for the project shall be developed.
- P-1d Personnel trained in refueling of vehicles.** Only personnel trained in refueling vehicles would be allowed to perform this operation. All refueling operations shall be in designated areas or performed by assigned vehicles.
- P-1e Preparation of environmental safety plans including spill prevention and response plan.** All applicable environmental safety plans associated with hazardous materials shall be developed for the project. These plans include but are not necessarily limited to Hazardous Material Business

(HMB) Plan; HAZCOM Plan; Spill Response Plan; 90-day temporary storage and disposal (TSD) facility permit; and SPCC Plan (only if storage is over 1,350 gallons at one location).

**P-1f Applicant’s and/or General Contractor environmental/health and safety personnel.** The Applicant will assign an Environmental Field Representative and/or General Contractor assigned Health & Safety Office to the project.

**P-1g Proper storage and disposal of generated waste.** All hazardous waste and solid waste shall be stored and disposed of in accordance with federal, State, and local regulations. Whenever feasible, hazardous material minimization methods shall be employed and all hazardous materials recycled.

**P-2a Test for residual pesticides/herbicides on currently or historically farmed land.** In areas where the land has been or is currently being farmed, soil samples shall be collected and tested for herbicides, pesticides, and fumigants to determine the presence and extent of any contamination. The sampling and testing plan shall be prepared in consultation with the County Agricultural Commission, and conducted by an appropriate California licensed professional and sent to a California Certified laboratory. Samples shall be tested at a California Certified Laboratory. A report documenting the areas proposed for sampling, and the process used for sampling, testing shall be submitted to the Lead Agencies for review and approval at least 60 days before construction. Results of the laboratory testing and recommended resolutions for handling and excavation of material found to exceed regulatory requirements shall be submitted to the Lead Agencies and BLM (if on BLM land) 30 days prior to construction.

Excavated materials containing elevated levels of pesticide or herbicide will require special handling and disposal according to procedures established by the regulatory agencies. Effective dust suppression procedures will be used in construction areas to reduce airborne emissions of these contaminants and reduce the risk of exposure to workers and the public. Regulatory agencies for the State of California (DTSC or RWQCB) and the appropriate County (San Diego or Imperial) shall be contacted by the Applicant or its contractor to plan handling, treatment, and/or disposal options.

**P-2b Stop work if contamination is detected.** If during excavation if soil or groundwater contamination is suspected (e.g., unusual soil discoloration or strong odor), the contractor or subcontractor shall immediately stop work and notify the General Contractor’s assigned Health & Safety Officer and/or the Applicant’s field environmental representative.

**P-2c Cordon off contaminated areas.** If soil or groundwater contamination is suspected, work near the excavation site shall be terminated, the work area cordoned off, and appropriate health and safety procedures implemented for the location by the General Contractor’s assigned Health & Safety Officer and/or the Applicant’s field environmental representative. Preliminary samples of the soil, groundwater, or material shall be taken by a 40-hour OSHA-trained individual. These samples shall be sent to a California Certified Laboratory for characterization.

**P-2d Notification of regulatory agencies.** If the sample testing determines that contamination is not present, work would be allowed to proceed at the site. However, if contamination is found above regulatory limits, the regulatory agency (e.g., RWQCB or CUPA) responsible for responding to and for providing environmental oversight of the region shall be notified in accordance with State or local regulations.

**P-3a Appoint individuals with correct training for sampling, data review, and regulatory coordination.** In the event that potential contaminated soil or groundwater is encountered, samples shall be collected by an OSHA-trained individual with a minimum of 40-hours hazardous material site worker training. Laboratory data from suspected contaminated material shall be reviewed by the contractor’s Health and Safety Officer and/or the Applicant’s Field Environmental Representative

and they shall coordinate with the appropriate regulatory agency (RWQCB or local CUPA agency) if contamination is confirmed to determine the suitable level of worker protection and the necessary handling and/or disposal requirements.

**P-3b Documentation of compliance with measures for encountering unknown contamination.** If during grading or excavation work, the contractor observes visual or olfactory evidence of contamination in the exposed soil a report of the location and the potential contamination, results of laboratory testing, recommended mitigation (if contamination is verified), and actions taken shall be submitted to the Lead Agencies and BLM (if on BLM lands) for each event. This report shall be submitted within 30 days of receipt of laboratory data.

**P-4a Include HTF in spill response plans and remediate contaminated soil.** Specific mention of heat transfer fluid (HTF) oil spill prevention and response shall be included in all project environmental safety plans, including the project Risk Management Plan (RMP) (in accordance with the California Accidental Release Prevention Program [CalARP] regulations), Hazardous Material Business Plan (HMBP) (submitted to the local Certified Unified Program Agency [CUPA] and the San Diego County Fire Department), and Hazardous Substance Control and Emergency Response Plan (see Mitigation Measure H-7a). In the event of a HTF oil spill, contaminated soil shall be removed to an onsite bio-remediation facility until the HTF oil concentrations have been reduced to acceptable levels as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**P-5a Evaluate contaminated sites.** The Applicant shall implement the following steps, at locations where excavation or significant ground disturbance will occur; all steps be completed at least 60 days prior to project construction, to prevent mobilization of contaminants and exposure of workers and the public:

- **Step 1.** Investigate the site to determine whether it has a record of hazardous material contamination which would affect construction activities. This investigation should be performed as a Phase I– Environmental Site Assessment (ESA). If contamination is found that could potentially affect the health and safety of workers or the public during construction of the project, proceed to Step 2.
- **Step 2.** Perform a characterization study of the site to determine the nature and extent of the contamination present at the location before construction activities proceed within the project ROW near the suspect site.
- **Step 3.** Determine the need for further investigation and/or remediation of the soil or groundwater conditions at or near the contaminated site, i.e., within areas of ground disturbance for the project. (For example, if there would be little or no contact with contaminated materials, industrial cleanup levels would likely be applicable. If site activities would involve human contact with the contaminated materials, such as would be the case with excavation of contaminated materials during project construction, then Step 4 shall be completed. If no human contact is anticipated, then no further mitigation would be required for the location.)
- **Step 4.** If it is determined that disturbance or excavation of soils or groundwater with contamination would accompany construction at the site, undertake a Phase II Environmental Site Investigation (Phase II ESI) involving sampling and further characterization of potentially contaminated areas with the project ROW or reroute the line away from the contamination area. Should further investigation reveal high levels of hazardous materials, mitigate health and safety risk according San Diego County CUPA or RWQCB regulations or requirements. This would include site-specific Health and Safety Plans, Work Plans, and/or Remediation Plans.

**P-5b Investigate contaminated sites.** All Government Code §65962.5 sites or other known contamination sites along the transmission line ROW or such sites that would affect construction work shall be investigated to determine potential impacts to the project.

The Applicant shall perform an environmental database review shall be conducted for power plant sites including access roads, linear facility routes, and staging areas. The results of the environmental database review and recommended measures shall be provided to the County for review and approval prior to land use clearance. Any identified sites shall be evaluated in accordance with Mitigation Measure P-5a.

## A.11 Public Health and Safety – Electric and Magnetic Fields and Other Field-Related Concerns

**PS-1a Limit the conductor surface electric gradient.** As part of the design and construction process for the project, the Applicant shall limit the conductor surface electric gradient in accordance with the IEEE Radio Noise Design Guide.

**PS-1b Document and resolve electronic interference complaints.** After energizing the transmission line, the Applicant shall respond to and document all radio/television/equipment interference complaints received and the responsive action taken. These records shall be made available to the CPUC for review upon request. All unresolved disputes shall be referred by the Applicant to the CPUC for resolution.

**PS-2a Implement grounding measures.** As part of the siting and construction process for the project, the Applicant shall identify objects (such as fences, metal buildings, and pipelines) within and near the right-of-way that have the potential for induced voltages and shall implement electrical grounding of metallic objects in accordance with the Applicant's standards. The identification of objects shall document the threshold electric field strength and metallic object size at which grounding becomes necessary.

## A.12 Air Quality

**AQ-1a Suppress dust at all work or staging areas and on public roads.** The Applicant shall: (a) pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas if construction activity causes persistent visible emissions of fugitive dust beyond the work area; (b) pre-water sites for 48 hours in advance of clearing; (c) reduce the amount of disturbed area where possible; (d) all dirt stock-pole areas should be sprayed daily as needed; (e) cover loads in haul trucks or maintain at least six inches of free-board when traveling on public roads; (f) pre-moisten, prior to transport, import and export dirt, sand, or loose materials; (g) sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets or wash trucks and equipment before entering public streets; (h) plant vegetative ground cover in disturbed areas as soon as possible following construction; (i) apply chemical soil stabilizers or apply water to form and maintain a crust on inactive construction areas (disturbed lands that are unused for four consecutive days); and (j) prepare and file 30 days in advance of construction with the SCAQMD, MDAQMD, and Lead Agencies a Dust Control Plan that describes how these measures would be implemented and monitored at all locations of the project. The Dust Control Plan shall identify nearby sensitive receptors, such as land uses that include children, the elderly, the acutely ill and the chronically ill, and specify the means of minimizing impacts to these populations (for example, by locating equipment and staging areas away from sensitive receptors).

**AQ-1b Use low-emission construction equipment.** The Applicant shall maintain construction equipment per manufacturing specifications and use low-emission equipment described here. All off-road and portable construction diesel engines not registered under the CARB Statewide Portable Equipment Registration Program, which have a rating of 50 horsepower (hp) or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Sec. 2423(b)(1) unless that engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. If any engine larger than 100 hp does not meet Tier 1 standards, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless the engine manufacturer indicates that the use of such devices is not practical for that particular engine type. The Applicant shall substitute small electric-powered equipment for diesel- and gasoline-powered construction equipment where feasible.

**AQ-1c Implement dust reduction measures. The following measures shall be implemented.**

- Prohibit construction grading on days when the wind gusts exceed 25 mph to the extent feasible to control fugitive dust.
- All trucks hauling soil and other loose material will be covered or maintain at least two feet of freeboard.
- Snow fence-type windbreaks will be erected in areas identified as needed by the Applicant.
- Vehicle speeds will be limited to 15 mph on unpaved (no gravel or similar surfacing material) roads.
- Unpaved roads will be treated by watering as necessary.
- Soil stabilizers will be applied to inactive construction areas on an as-needed basis.
- Exposed stockpiles of soil and other excavated materials will be contained within perimeter silt fencing, watered, treated with soil binders, or covered as necessary.

**AQ-1d Prevent transport of mud and dust.** To minimize mud and dust from being transported onto paved roadway surfaces, pave or gravel, use rattle plates, or apply water at sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface. The Applicant will implement this measure where applicable and not conflicting with other requirements.

**AQ-1e Encourage carpooling.** If suitable park-and-ride facilities are available in the project vicinity, construction workers will be encouraged to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the project would depend upon the proximity of carpool facilities to the job site, the geographical commute departure points of construction workers, and the extent to which carpooling would not adversely affect worker show-up time and the project's construction schedule.

**AQ-1f Minimize vehicle idling.** To the extent feasible, unnecessary construction vehicle and idling time will be minimized. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a “common sense” approach to vehicle use; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as a part of pre-construction conferences. Those briefings will include discussion of a “common sense” to vehicle use.

**AQ-1g Obtain NO<sub>x</sub> and particulate matter emission offsets.** The Applicant shall obtain and hold for the duration of construction emission reduction credits or fund incentive programs approved by SCAQMD or MDAQMD, depending on project jurisdiction, at sufficient levels to offset the construction emissions of NO<sub>x</sub> and particulate matter. The emission reduction credits or incentive program shall comply with SCAQMD or MDAQMD rules and regulations, and the credits or reductions shall be obtained by the Applicant prior to commencing construction.

**AQ-2a Offset construction-phase greenhouse gas emissions with carbon credits.** The Applicant shall create greenhouse gas emission reductions or obtain and hold for the duration of project construction sufficient carbon credits to fully offset construction-phase greenhouse gas emissions. During construction the Applicant shall report the status of efforts to create reductions or obtain banked credits and the quantity of construction-phase greenhouse gas emissions offset by credits. At a minimum, the Applicant shall create or obtain and hold carbon credits to offset a specified quantity of carbon dioxide emissions for the duration of construction. Carbon Reduction Tons (CRTs) verified according to the rules of the California Climate Action Registry may be retired by the Applicant to satisfy this requirement.

**AQ-3a Use low emission vehicles for facility maintenance and operation.** The Applicant shall use low emission or alternatively-fueled vehicles to pull the water trailers, if used in the cleaning of mirrors to reduce ozone precursors and PM<sub>10</sub> emissions. Electric (battery) powered all-terrain vehicles shall be used where feasible to support the maintenance crew within the facility eliminating operation emissions and reducing soil erosion. The Applicant shall submit a copy of the plan that identifies the size and type of on-site electric and fossil-fueled vehicle and equipment fleet and vehicle and equipment purchase orders to the Lead Agencies at least 60-days prior to start of commercial production.

**AQ-3b Provide a site dust control plan.** The Applicant shall design a wind erosion control plan including but not limited to windbreaks, and water and chemical dust suppressant, on areas that would be disturbed by vehicles or wind. Wind breaks would remain in place until the soil or road is stabilized. The Applicant shall limit vehicle speeds within the facility to no more than 10 miles per hour to address fugitive PM emissions from the renewable project sites. The Applicant shall submit a site dust control plan that identifies the dust and erosion control procedures that will be used during operation of the project and that identifies all locations subject to the speed limit to the Lead Agencies at least 30 days prior to commercial operation. The Applicant shall submit a copy of the project employee and contractor training manual that identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits to the Lead Agencies no later than 60 days after the start of commercial operation.

## A.13 Water Resources

**H-1a Minimize construction and maintenance disturbance to riparian areas.** All construction and maintenance activities shall be conducted in a manner that minimizes disturbance to riparian/wetland vegetation, drainage channels, and intermittent and perennial stream banks to the extent feasible.

**H-1b Avoid watercourses to the maximum extent possible.** To the extent feasible, structures shall be placed so as to avoid sensitive features such as watercourses, or to allow conductors to clearly span the features, within limits of safety and standard structure design.

**H-1c Identify and mark sensitive areas for avoidance.** Specific sites as identified by authorized agencies (e.g., fragile watersheds) where construction equipment and vehicles are not allowed shall be clearly marked onsite before any construction or surface disturbing activities begin.

Construction personnel shall be trained to recognize these markers and understand the equipment movement restrictions involved.

**H-1d Develop and implement construction Best Management Practices.**

1. Adequate distance from stream banks and beds will be maintained during construction activities.
2. Construction activities will use existing bridges to cross major streams and culverts in most dry intermittent streams.
3. Surface water, riparian areas and floodplains will be spanned where feasible.
4. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented.
5. Storm Water Best Management Practices (BMPs) for construction will be implemented per the requirements of the project's SWPPP.
6. Silt fencing, straw mulch, straw bale check dams would be installed as appropriate to contain sediment within construction work areas and staging areas. Where soils and slopes exhibit high erosion potential, erosion control blankets, matting, and other fabrics and/or other erosion control measures.
7. The potential for increased sediment loading will be minimized by limiting road improvements to those necessary for project construction, operation and maintenance.
8. Upland pull sites will be selected to minimize impacts to surface waters, riparian areas, wetlands and floodplains.
9. Structures will not be placed in streambeds or drainage channels to the extent feasible.

**H-1e Stream crossings at low flow periods.** Any stream crossings will be constructed at low flow periods and, if necessary, a site-specific mitigation and restoration plan would be developed.

**H-1f Compliance with NPDES regulations.** Secure any required General Permit for Storm Water Discharges Associated with Construction Activity (NPDES permit) authorization from the State Water Resources Control Board and/or the RWQCB to conduct construction-related activities to build the project and establish and implement a SWPPP during construction to minimize hydrologic impacts.

**H-1g Construction routes to avoid and minimize disturbance to stream channels.** To the extent feasible, where the construction of access roads would disturb sensitive features such as streambeds, the route of the access road would be adjusted to avoid such impacts. Whenever practicable, construction and maintenance traffic would use existing roads or cross-country access routes (including the ROW) which avoid impacts to the sensitive feature. To minimize ground disturbance, construction traffic routes will be clearly marked with temporary markers such as easily visible flagging. Construction routes, or other means of avoidance, must be approved by the appropriate agency or landowner before use. Where it is not feasible for access roads to avoid streambed crossings, such crossings would be built at right angles to the streambeds whenever feasible. Where such crossings cannot be made at right angles, the Applicant would limit roads constructed parallel to streambeds to a maximum length of 500 feet at any one transmission line crossing location. Such parallel roads would be constructed in such a manner that minimizes potential adverse impacts on waters of the U.S. or waters of the state. Streambed crossings or roads constructed parallel to streambeds would require review and approval of necessary permits from the ACOE, CDFG, and SWRCB/RWQCB.

**H-2a Groundwater testing and treatment before disposal.**

1. In no case will groundwater removed during construction be discharged to surface waters or storm drains without first obtaining any required permits.
2. If dewatering is necessary, the water will be contained and sampled to determine if contaminants requiring special disposal procedures are present.
3. If the water tests sufficiently clean and land application is determined feasible per applicable SWRCB and RWQCB requirements, the water would be directed to relatively flat upland areas for evaporation and infiltration back to the water table, used for dust control, or used as makeup for a construction process (e.g., concrete production).
4. Water determined to be unsuitable for land application or construction use would be disposed of in another appropriate manner, such as treatment and discharge to a sanitary sewer system in accordance with applicable permit requirements or hauled offsite to an approved disposal facility.

**H-2b No storage of fuels and hazardous materials near sensitive water resources.** Storage of fuels and hazardous materials will be prohibited within 200 feet of groundwater supply wells and within 400 feet of community or municipal wells.

**H-2c Proper disposal and clean-up of hazardous materials.** Hazardous materials will not be disposed of onto the ground, the underlying groundwater, or any surface water. Totally enclosed containment will be provided for trash. Petroleum products and other potentially hazardous materials would be removed to a hazardous waste facility permitted or otherwise authorized to treat, store, or dispose of such materials. In the event of a release of hazardous materials to the ground, it will be promptly cleaned up in accordance with applicable regulations.

**H-2d Maintain vehicles and equipment.** All vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order so that they are free of any and all leaks that could escape the vehicle or contact the ground. A vehicle and equipment maintenance log shall be updated and provided to the Lead Agencies once monthly during project construction.

**H-3a Install solar power plant facility runoff control.** The pad for new solar projects shall be constructed with a pervious and/or high-roughness (for example, gravel) surface where possible to ensure maximum percolation of rainfall after construction. Detention/retention basins shall be installed to reduce local increases in runoff, particularly on frequent runoff events (up to 10-year frequency). Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimics the natural condition as much as possible. A drainage design hydrologic and hydraulic analysis shall be provided to the Lead Agencies for review and approval prior to the initiation of construction.

**H-4a Scour protection to include avoidance of bank erosion and effects to adjacent property.** A determination of towers requiring scour protection shall be made during the design phase by a registered professional engineer with expertise in river mechanics. All towers within the project shall be reviewed by the river mechanics engineer and the foundations of those towers determined to be subject to scour or lateral movement of a stream channel shall be protected by burial beneath the 100-year scour depth, setbacks from the channel bank, or bank protection as determined by the river mechanics engineer. An evaluation shall also be made regarding the potential for the tower and associated structures to induce erosion onto adjacent property. Should the potential for such erosion occur, the tower location shall be moved to avoid this erosion, or erosion protection (such as rip rap) provided for the adjacent property. This evaluation, and associated scour/erosion protection design plans, shall be submitted to the Lead Agencies for review and approval 60 days prior to the initiation of construction of the towers.

**H-5a Develop Hazardous Substance Control and Emergency Response Plan for project operation.** The Applicant shall prepare and implement a Hazardous Substance Control and Emer-

gency Response Plan for project operation, and a copy shall be kept onsite at substations. This plan shall include definition of an emergency response program to ensure quick and safe cleanup of accidental spills, including prescriptions for hazardous-material handling to reduce the potential for a spill during construction. The plan will identify areas where refueling and vehicle-maintenance activities and storage of hazardous materials, if any, will be permitted. These directions and requirements will also be reiterated in the project SWPPP. The Applicant shall submit this Response Plan to the Lead Agencies for review and approval at least 60 days before construction.

## A.14 Geology, Mineral Resources, and Soils

**G-1a Limit modification of access roads.** Widening or upgrading of existing access roads will be limited in areas where soils are very sensitive to disturbance to the extent feasible.

**G-1b Implement erosion control procedures.**

1. Vehicle and construction equipment use will be restricted to access roads and areas in the immediate vicinity of construction work sites to help reduce soil disturbance.
2. In agricultural areas, topsoil would be left in roughened condition.
3. When practical, construction activities will be avoided on wet soil to reduce the potential for soil compaction, rutting, and loss of soil productivity.
4. Disturbed areas will be returned to their pre-construction contours. Revegetation and monitoring for vegetative success will follow the guidelines outlined in Mitigation Measure B-1a (Provide restoration/compensation for affected sensitive vegetation communities).
5. Construction of access roads in inaccessible terrain will be reduced by using helicopters to place structures in select locations.

**G-1c Restore surfaces for erosion control and revegetation.** In areas where ground disturbance is substantial or where re-contouring is required (e.g., marshaling yards, tower sites, spur roads from existing access roads), surface restoration will occur as necessary for erosion control and revegetation. The method of restoration will normally consist of returning disturbed areas back to their original contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches for erosion control. Potential for erosion will be minimized on access roads and other locations primarily with water bars. The water bars will be constructed using mounds of soil shaped to direct the flow of runoff and prevent erosion. Soil spoils created during ground disturbance or re-contouring shall be disposed of only on previously disturbed areas, or used immediately to fill eroded areas. Cleared vegetation can be hauled offsite to a permitted disposal location, or may be chipped or shredded to an appropriate size and spread in disturbed areas of the ROW with the approval of the biological monitor. To limit impact to existing vegetation, appropriately sized equipment (e.g., bulldozers, scrapers, backhoes, bucket-loaders, etc.) will be used during all ground disturbance and re-contouring activities.

**G-2a Protect desert pavement.** Grading for new access roads or work areas in areas covered by desert pavement shall be avoided or minimized. If avoidance of these areas is not possible, the desert pavement surface shall be protected from damage or disturbance from construction vehicles by use of temporary mats placed on the ground surface. A plan for identification and avoidance or protection of sensitive desert pavement shall be prepared and submitted to the Lead Agencies for review and approval at least 60 days prior to start of construction. The plan shall define how protective measures will prevent destruction of desert pavement.

**G-3a Conduct geotechnical studies for soils to assess characteristics and aid in appropriate foundation design.** The design-level geotechnical studies to be performed by the Applicant shall

identify the presence, if any, of potentially detrimental soil chemicals, such as chlorides and sulfates. Appropriate design measures for protection of reinforcement, concrete, and metal-structural components against corrosion shall be utilized, such as use of corrosion-resistant materials and coatings, increased thickness of project components exposed to potentially corrosive conditions, and use of passive and/or active cathodic protection systems. The geotechnical studies shall also identify areas with potentially expansive or collapsible soils and include appropriate design features, including excavation of potentially expansive or collapsible soils during construction and replacement with engineered backfill, ground-treatment processes, and redirection of surface water and drainage away from expansive foundation soils. Studies shall conform to industry standards of care and ASTM standards for field and laboratory testing. Study results and proposed solutions shall be provided to the Lead Agencies for review and approval at least 60 days before final project design.

**G-3b Avoid structure placement in high shrink/swell areas.**

**G-4a Reduce effects of groundshaking.** The design-level geotechnical investigations performed by the Applicant shall include site-specific seismic analyses to evaluate the peak ground accelerations for design of project components. Based on these findings, project structure designs shall be modified/strengthened, as deemed appropriate by the project engineer, if the anticipated seismic forces (high calculated peak vertical and horizontal ground accelerations due to severe groundshaking) are found to be greater than anticipated wind load stresses on project structures. Study results and proposed design modifications shall be provided to the Lead Agencies for review and approval at least 60 days before final project design.

**G-4b Conduct geotechnical investigations for liquefaction.** Because seismically induced liquefaction-related ground failure has the potential to damage or destroy project components, the design-level geotechnical investigations to be performed by the Applicant shall include investigations designed to assess the potential for liquefaction to affect the approved project and all associated facilities, specifically at tower locations in areas with potential liquefaction-related impacts. Where these hazards are found to exist, appropriate engineering design and construction measures shall be incorporated into the project designs as deemed appropriate by the project engineer. Design measures that would mitigate liquefaction-related impacts could include construction of pile foundations, ground improvement of liquefiable zones, installation of flexible bus connections, and incorporation of slack in cables to allow ground deformations without damage to structures. Study results and proposed solutions to mitigate liquefaction shall be provided to the Lead Agencies for review and approval at least 60 days before final project design.

**G-4b Place structures in stable areas.** Structures will be placed in geologically stable areas, avoiding fault lines, brittle surface rock and bedrock, etc. to the extent feasible.

## A.15 Socioeconomics, Services, and Utilities

**S-2a Coordinate with utility providers.** The Applicant will coordinate with all utility providers with facilities located within or adjacent to the project to ensure that design does not conflict with other facilities. In the event of a conflict, the project will be aligned vertically and/or horizontally as appropriate to avoid other utilities and provide adequate operational and safety buffering. Alternately, the other existing facilities may be relocated. Long-term operations and maintenance of the project will be negotiated through easement, purchased right-of-way, franchise agreement, or joint use agreement.

**S-3a Recycle construction waste.** To comply with the Integrated Waste Management Act of 1989, during project construction the Applicant and/or its construction contractor shall recycle a minimum of 50 percent of the waste generated during construction activities. Following the

completion of construction activities, the Applicant shall provide the Lead Agencies with documentation from the recycling and landfill facilities used to show that the amount of waste recycled was 50 percent or more.

- S-3b Use reclaimed water.** To the extent feasible, the Applicant shall coordinate with local water districts in advance in order to efficiently obtain reclaimed or potable water for delivery to the construction sites and to meet any restrictions imposed by them. The Applicant shall provide a letter describing the availability of reclaimed water and efforts made to obtain it for use during construction to the Lead Agencies a minimum of 60 days prior to the start of construction.
- S-3c Coordinate construction schedule with emergency services.** The Applicant will coordinate construction schedules, lane closures, and other activities with installation of the project with emergency and police services to ensure that disruption to response times and access is minimized.