

5.18 CUMULATIVE IMPACTS

The analysis of cumulative effects of this Project is governed by both federal and state of California regulations. At the federal level, the National Environmental Policy Act of 1969 (NEPA) implementing regulations require that all federal agencies consider the cumulative effects of their actions on the environment. As defined under NEPA, “cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 Code of Federal Regulations [CFR] 1508.7).” The Council on Environmental Quality’s regulations for implementing NEPA require that agencies analyze the direct, indirect, and cumulative effects of a proposed action and any reasonable alternatives to that proposed action (40 CFR 1502.16, 1508.25, and 1508.27[b][7]).

At the state level, the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] 21083) and associated CEQA Guidelines (California Code of Regulations [CCR] 15130) require that the discussion of cumulative effects be “guided by the standards of practicality and reasonableness” (PRC 21083[b]), and that “the discussion include a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts” (CCR 15130[b][1][A]). The CEQA guidelines require that cumulative effects be discussed when they are significant, and that the discussions of cumulative effects reflect the severity of the effects and their likelihood of occurrence.

The terms below are used in this analysis to discuss effects as further outlined in Table 5.18-1, Definition of Direct, Indirect, and Cumulative Effects.

- **Direct Effects:** caused by the action and occurring at the same time and place (40 CFR 1508.8).
- **Indirect Effects:** caused by an action and are later in time or farther removed in distance but are still reasonably likely. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effect on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
- **Cumulative Effects:** additive or interactive effects resulting from the incremental effect of the Project when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions (40 CFR 1508.7 and 1508.25(c)). Interactive effects may be either countervailing (the net cumulative effect is less than the sum of the individual effects) or synergistic (the net cumulative effect is greater than the sum of individual effects). This Application for Certification (AFC) addresses cumulative effects that are reasonably foreseeable rather than speculative.

- **Reasonably Foreseeable Future Actions:** this term is used in concert with the Council on Environmental Quality (CEQ) definitions of cumulative effects, but the term itself is not further defined. Most regulations that refer to “reasonably foreseeable” do not define the meaning of the words, but do provide guidance on the term. For this analysis, reasonably foreseeable future actions or effects are those likely (or reasonably certain) to occur within the timeframe used for analyzing environmental consequences and are not purely speculative. Our determination of “reasonably foreseeable” is based on documents such as existing plans, permits, permit applications, announcements such as Federal Register notices, or other published NEPA documents.

**Table 5.18-1
Definition of Direct, Indirect, and Cumulative Effects**

Effect Issues	Direct Effect	Indirect Effect	Cumulative Effects
Nature of effect	Typical/inevitable/ predictable	Reasonably foreseeable/ probable	Reasonably foreseeable/ probable
Cause of effect	Project	Project’s direct and secondary effects	Project’s direct and secondary effects and effects of other activities
Timing of effect	Project construction and implementation	Some time after direct effects	At time of project construction or in the future
Location of effect	Within Project effect area	Within boundaries of systems (i.e., resources) affected by Project	Within boundaries of systems affected by the Project

Source: Oregon Department of Transportation and Federal Highway Administration, 2001.

The purpose of this section of the AFC is to identify past, present, and reasonably foreseeable actions in the vicinity of the Project and its ancillary systems that could affect the same resources, and provide the following analysis:

- determine if the effects of the Project and the other actions would overlap in time or geographic extent,
- determine if the effects of the Project would interact with, or intensify, the effects of the other actions, and
- identify any potentially significant cumulative affects.

Where potentially significant effects have been identified, an assessment of cumulative effects is provided under each respective resource in Section 5.0, Environmental Information, of this AFC.

The Project includes the construction, operation, maintenance, and de-commissioning of up to 850 megawatts (MW) of capacity by a solar power generating facility and its ancillary systems in two phases (Phase I: 500MW [approximately 5,838 acres]/Phase II 350MW [approximately 2,392 acres]). The Project will consist of up to approximately 34,000 SunCatchers. Construction is anticipated to occur over an approximate four-year period beginning in 2010 and ending in 2014. It is estimated that approximately an average of 400 construction and 180 long-term labor jobs will be required.

The Project is located in an undeveloped area of San Bernardino County, California approximately 37 miles east of Barstow, California and north of Interstate 40 (I-40) between approximately 1,925 to 3,050 feet above mean sea level. The Project is located primarily on Bureau of Land Management (BLM) land within the Barstow Field Office. Approval of the Project Right-of-Way (ROW) Grant Application (Form 299, Applications CACA 49539 and 49537) will result in the issuance of a ROW Grant Permit for use of federal lands administered by the BLM. The Project would require a plan amendment to the 1980 California Desert Conservation Area (CDCA) Plan.

The area where the Project would be constructed is primarily open, undeveloped land within the Mojave Desert. The Cady Mountain Wilderness Study Area (WSA) is located north of the Solar One site. The Pisgah Crater, within the BLM-designated Pisgah Area of Critical Environmental Concern (ACEC), is located south and east of the Project (south of I-40 by several miles). Several underground and above ground utilities traverse the area as well.

An approved interconnection letter from California Independent Service Operator (CAISO) has been issued for the Project. The associated System Impact Study (SIS) is located in Appendix H. The SIS indicates that additional upgrades to the Southern California Edison (SCE) Lugo-Pisgah No. 2 Transmission Line and upgrades at the SCE Pisgah Substation will be required for the full build out of the 850MW Project. Supplemental studies performed by SCE and CAISO indicate that capacity is available on the existing transmission system to accommodate less than the 850MW Project.

An on-site substation (i.e., Solar One Substation [approximately 3 acres]) will be constructed to deliver the electrical power generated by the Project to the SCE Pisgah Substation. Approximately twelve to fifteen 220kV transmission line structures (90 to 110 feet tall) would be required to make the interconnection from the Solar One Substation to the SCE Pisgah Substation. All of these structures would be constructed within the Project Site.

The Project will include a centrally located Main Services Complex (14.4 acres) that includes three SunCatcher assembly buildings, administrative offices, operations control room, maintenance facilities, and a water treatment complex including a water treatment structure, raw water storage tank, demineralized water storage tank, basins, and potable water tank.

Adjacent to the Main Services Complex, a 14-acre temporary construction laydown area will be developed and an approximately 6-acre construction laydown area will be provided adjacent to the Satellite Services Complex south of the Burlington Northern Santa Fe (BNSF) railroad. Two additional construction laydown areas (26 acres each) one will be located at the south entrance off Hector Road and the other at the east entrance just north of the SCE Pisgah Substation.

Temporary construction site access would be provided off of I-40 beginning east of the SCE Pisgah Substation and would traverse approximately 3.5 miles across the Pisgah ACEC requiring an approximate 30-foot ROW. Long-term permanent access would be provided by a bridge over the BNSF railroad along Hector Road north of I-40. Equipment may be transported during construction via trucks and/or rail car (through the construction of a siding), that would be located on the north side of BNSF railroad and east of Hector Road or as authorized by BNSF.

Water would be provided via a groundwater well located on a portion of the BLM land north of the Main Services Complex and transported through an underground pipeline. The expected average well water consumption for the Project during construction is approximately 50 acre-feet

per year. Under normal operation (inclusive of mirror cleaning, dust control, and potable water usage), water required will be approximately 36.2 acre-feet per year. Emergency water may be trucked in from local municipalities.

5.18.1 Affected Environment

Information on the Project includes consideration of movement and transportation of materials and energy. Cumulative effects on the social environment can encompass information needs related to human populations, economic and health indicators, and infrastructure requirements. For this reason, different spatial boundaries may exist for different resources included in the analysis.

Factors to consider include:

- the size and nature of the Project and its anticipated effects,
- the availability of existing data and knowledge about the Project and its environmental effects,
- the feasibility of collecting new data and knowledge,
- the size, nature, and environmental effects of past, existing, and future projects and activities in the area,
- the characteristics and sensitivity of the receiving environment (extent and degree of existing stress),
- relevant ecological boundaries (watersheds, major ecological features, etc.), and
- relevant jurisdictional boundaries.

The California Energy Commission's (CEC) Rules of Practice and Procedure and Power Plant Site Certification Regulations relative to cumulative effects differ by discipline. NEPA's regulations relating to cumulative effects do not define specific radii for cumulative effects to be assessed. For this Project, cumulative effects would be considered within a regional perspective, including linears and ancillary features associated and considered part of the Project. This regional perspective employs study areas for cumulative effects that differ between each resource area and that are appropriate for each resource area. This approach is based on guidance from the CEC and BLM as further described below in Section 5.18-3, Cumulative Effects by Resource.

5.18.1.1 Environmental Setting and Past Actions

As described in greater detail in Section 5.9, Land Use, of this AFC, the existing land uses surrounding the Project consist mainly of open space, recreational, military, government (BLM), community, and small portions are designated as industrial and urban. The City of Ludlow is the nearest city, located 13 miles from the Project. The City of Barstow, population approximately 23,952, is located approximately 37 miles west of the Project (California Department of Finance). San Bernardino County, in general, and the desert area in particular, are known as an area with a large degree of open space. In addition to agriculture, the two large employment sectors in the Barstow labor market area include Government and Wholesale/Retail Trade.

Newbury Springs, population approximately 200, is a small desert town west of the Project area that covers approximately 8.9 square miles.

The Project is situated on undeveloped public land administered by the BLM. The West Mojave Planning Area encompasses approximately 108,000 acres (168.5 square miles) of sparsely populated BLM-administered public and county open space lands. The site is roughly bounded on the north by the Cady Mountain WSA and bounded to the south by the Interstate 40. Both the WSA to the north and Pisgah ACEC to the south-east are lightly used for recreation. No cross-country travel is allowed to protect sensitive wildlife, archaeological sites, and to prevent soil erosion and degradation of scenic quality. The BLM has designated multiple swaths of land in the project vicinity as ACECs. The area is managed under the BLM California Desert Conservation Area Resource Management Plan (CDCA Plan) (BLM 1980, as amended). The site is bounded to the west by Hector Road and the site is divided by the BNSF rail line. Two existing unpaved access roads traverse a portion of the site from the east along the existing transmission lines, and from a southwestern entrance off of Hector Road.

Twentynine Palms Marine Corps Air Ground Combat Center, a Marine Air Ground Task Force Training Command (MAGTFTC) is located approximately 15 miles to the south of the Project. Twentynine Palms is located in the Morongo basin which stretches from approximately Interstate 10 to I-40 and occupies 932 square miles of the southern Mojave Desert. Each year roughly one-third of the Fleet Marine Force and Marine Reserve units, approximately 50,000 Marines, participate in the base's training exercise program. These training exercises involve every weapons system in the Marine Corps' arsenal, from small arms to attack aircraft. In addition the MAGTFTC provides facilities, services, and support, responsive to the needs of tenant commands, Marines, Sailors and their families. The population of the Combat Center is 9,723 Active Duty members, 8,588 dependents, and approximately 1,398 civilians. A possible expansion of the facility is discussed in Section 5.18.2.1

There are two existing Solar Power Plants located near Daggett, CA, approximately 17 miles west of the Project site, employing two different solar technologies. The SEGS I and II plants use thermal energy collected by the parabolic trough fields to produce steam which in turn drives a Rankine steam/turbine generator system. The SEGS II plant also employs natural gas to assist solar energy production. SEGS I and II are owned and operated by Sunray Energy Inc. and the power is purchased by SCE. The National Renewable Energy Laboratory (NREL) website has both projects listed as operational.

Another solar power plant using heliostat, or power tower, technology is located adjacent to the SEGS I and II. A 10MW heliostat tower plant named Solar One was operational from 1982 to 1988 and produced electricity in excess of 38 Gigawatt hours. To avoid confusion with the SES Solar One Project, this prior heliostat project will be referred to as the Solar One Tower. Steam for the Solar One Tower was generated directly in the tower. The Solar One Tower was retrofitted with a receiver, storage system, and a steam generator in an effort to improve heat transfer and thermal storage. A molten salt heat transfer fluid was used in conjunction with the newly installed technology. The retrofitted plant was termed Solar Two Tower and was operational from 1998 to 1999. Solar Two Tower was decommissioned in 1999, and was converted by the University of California, Davis, into an Air Cherenkov Telescope in 2001, measuring gamma rays hitting the atmosphere.

Table 5.18-2, Past Actions within the Project Vicinity, provides a list of past actions that have contributed to the existing environmental conditions within the 10-mile radius surrounding the Project and the resources that may have been affected.

**Table 5.18-2
Past Actions Within the Project Vicinity**

Action	Resource(s) Potentially Affected	Mechanism(s) of Potential Effect
OHV use	Air, Soil, Wildlife, Cultural, Paleontological, and Vegetation	Dust/particulates, erosion, noise, and disturbance
Marine Corps Training Activities	Air, Wildlife and Human Health	Emissions, noise, and disturbance
Agriculture	Air, Soil, Wildlife, Water Resources, Vegetation, and Visual	Dust/particulates, erosion, noise, sediment runoff, disturbance, water pollution due to pesticides, and groundwater contamination
Mining	Air, Soil, Wildlife, Human Health, Water Resources, Vegetation, Cultural, Paleontological, and Visual	Dust/particulates, erosion, noise, sediment runoff, disturbance, vehicular runoff (i.e., petroleum products), habitat fragmentation, and wildlife mortality/injury (i.e., vehicular collisions)
Power Generation (Solar and Traditional)	Air, Soil, Wildlife, Cultural, Paleontological, Vegetation, Visual and Hazardous Materials	Dust/particulates, erosion, noise, sediment runoff, disturbance, vehicular runoff (i.e., petroleum products), habitat fragmentation, and wildlife mortality/injury (i.e., vehicular collisions)
Highways and roads	Air, Soil, Wildlife, Human Health, Water Resources, Vegetation, Cultural, Paleontological, and Visual	Dust/particulates, erosion, noise, sediment runoff, disturbance, vehicular runoff (i.e., petroleum products), habitat fragmentation, and wildlife mortality/injury (i.e., vehicular collisions)
Urban development (i.e., housing, industry, urban infrastructure, and landfills)	Air, Soil, Wildlife, Human Health, Water Resources, Vegetation, Cultural, Paleontological, Visual, and Hazardous Materials	Dust/particulates, erosion, noise, sediment runoff, disturbance, vehicular runoff (i.e., petroleum products), habitat fragmentation, wildlife mortality/injury (i.e., vehicular collisions), and groundwater contamination

Source: URS Corporation, 2008.

Note:

OHV = off-highway vehicle

5.18.2 Environmental Consequences

5.18.2.1 *Present and Reasonably Foreseeable Future Actions*

According to the California Renewables Portfolio Standard, utilities such as SCE are required to achieve a 20 percent renewable energy portfolio by 2010. Current energy policy calls for more development of solar energy within San Bernardino County and the CDCA, promotion of sustainable business, and greater use of renewable forms of energy. According to the land use goals and policies of the San Bernardino County General Plan, an energy overlay may be obtained through a conditional use permit and a General Plan Amendment. As a result, there are several renewable energy projects for which applications are currently being processed near this Project's area.

Within the CDCA and on BLM-administered public lands alone, over one hundred right-of-way applications are currently on file with the BLM for solar energy development. Other renewable energy projects (e.g., wind, geothermal, biofuel, etc.) are also being considered. San Bernardino County has been at the forefront of this development, seeing an influx of geothermal, solar, biofuel, and other renewable projects within the last few years (see Figure 5.18-1, Pending BLM Applications in California Desert Conservation Area).

It is important to note project sequence relative to this cumulative effects study. The baseline considered for this analysis was described above and consists of the existing development in the Project vicinity. The future baseline includes proposed projects likely to occur at the same time or before the Project. This study included analysis of the cumulative effects of the Project in combination with the transmission line upgrades specifically, and generally, some of the proposed renewable projects in the vicinity.

Additionally, this analysis considered future projects likely to occur after the Proposed Project. The Solar Three project was specifically included in this analysis because it is planned in the near future and it is adjacent to Solar One. Other renewable projects in the area, because of their more uncertain nature, were analyzed on a more general level, including the possibility of a SES Solar Six Project located approximately 8 miles to east of the Solar One Site. Solar One would incrementally add to the effects of projects that are part of the existing and/or future baseline, and future projects would incrementally add to the effects of the Solar One Project. Such impacts would be either significant or less than significant.

Finally, many projects, currently proposed, will be developed after Solar One. The Proposed project will be included in the environmental baseline of these projects. Therefore, the cumulative effects from Solar One for such future projects should be considered during the individual project regulatory review for the future projects.

A general analysis was performed of many of the other renewable projects in the area because of the lack of certainty as to which ones would occur before or after the Solar One.

The BLM is currently scoping a Programmatic Environmental Impact Statement (EIS) for solar energy development in the CDCA. Information from this programmatic EIS is not available at this time; however, a Summary of Public Scoping Comments was published in October 2008 and is available for public review. This document summarizes public and agency concerns related to

large solar projects in the western United States. A top-level discussion of cumulative effects in the CDCA is presented in Section 5.18.3, Cumulative Effects to the CDCA.

Table 5.18-3, Pending BLM Applications for Energy Projects Near the Project and Other Reasonably Foreseeable Future Projects Within Project Vicinity, and Figure 5.18-2, Pending BLM Applications Near Project Area, show pending BLM applications near the Project Area and other reasonably foreseeable future projects. Some of the data contained in this table may no longer be accurate because of land use changes or because some companies are no longer interested in pursuing projects as originally planned. For example, SES Solar Eight, LLC’s project (CACA 049540) is no longer viable because the land proposed for its use is now part of an ACEC. Each application is denoted using the Serial Number.

**Table 5.18-3
Pending BLM Applications for Energy Projects Near the Project and Other Reasonably Foreseeable Future Projects Within Project Vicinity**

Serial #	Applicant or Holder/Billee	Applicant or Holder/Billee Address	Acres	Case Disposition	Date Application Received	Remarks	Update
CACA 047702	SES Solar One, LLC	2920 E Camelback Rd. Ste. 150 Phoenix, AZ 85016	6,778.91	Pending	11/05	914MW Stirling thermal solar generated power plant	11/13/08
CACA 048472	Power Partners Southwest LLC	--	10,240	Pending	10/06	--	11/14/08
CACA 048563	SES Solar One, LLC	2920 E Camelback Rd. Ste. 150 Phoenix, AZ 85016	15	Pending	10/06	1MW demonstration site for Solar One; application complete	11/13/08
CACA 048629	Oak Creek Energy Systems Inc	--	17,920	Pending	12/06	--	11/14/08
CACA 048667	Oak Creek Energy Systems Inc	--	23,748.64	Pending	08/06	--	11/14/08
CACA 048758	Solar Investments, LLC	c/o Goldman Sachs 85 Broad St. New York, NY 10004	8,000	Pending	01/07	--	11/13/08
CACA 048875	DPT Broadwell Lake, LLC	1999 Harrison St. Ste. 500 Oakland, CA 94612	5,130.61	Pending	01/07	5 contiguous 100MW solar power plants	11/13/08
CACA 049004	Boulevard Associates, LLC	700 Universe Blvd. Juno Beach, FL 33408	13,760	Pending	05/07	--	11/13/08
CACA 049179	FPL Energy	6 Belcourt Dr. Newport Beach, CA 92660	12,760	Pending	07/07	1000MW solar trough electric generation farm	11/13/08
	FPL Energy	700 Universe Blvd. Juno Beach, FL 33408				2nd in line behind Stirling	

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Pending BLM Applications for Energy Projects Near the Project and Other Reasonably
Foreseeable Future Projects Within Project Vicinity**

Serial #	Applicant or Holder/Billee	Applicant or Holder/Billee Address	Acres	Case Disposition	Date Application Received	Remarks	Update
CACA 049328	FPL Energy	6 Belcourt Dr. Newport Beach, CA 92660	13,440	Pending	09/07	1000MW solar thermal energy facility; 2nd in line Brightsource	11/13/08
CACA 049362	Optisolar Inc.	31302 Huntwood Ave. Hayward, CA 94554	2,500	Pending	10/07	500MW PV energy facility	11/13/08
CACA 049403	Solar Partners X LLC	1999 Harrison St Ste 500 Oakland, CA 94612	10,465.29	Pending	09/07	Concentrated solar, three 200MW plants; 600MW total	11/13/08
CACA 049434	PG&E	245 Market St. #1600 San Francisco, CA 94106	5,900	Pending	08/07		11/13/08
CACA 049537	SES Solar Three LLC	2920 E Camelback Rd Ste 150 Phoenix, AZ 85016	4,810	Pending	03/07	605MW Stirling Solar Thermal power plant; Solar 3	11/13/08
CACA 049539	SES Solar Six LLC	2920 E Camelback Rd Ste 150 Phoenix, AZ 85016	12,365	Pending	03/07	692MW Solar Thermal power plant; Solar 6	11/13/08
CACA 049540	SES Solar Eight LLC	2920 E Camelback Rd Ste 150 Phoenix, AZ 85016	10,044	Pending	03/07	Solar 8	11/13/08
CACA 049585	ENXCO Development Inc	5000 Executive Pkwy Ste 140 San Ramon, CA 94583	3,840	Pending	12/07	Trough solar farm	11/13/08
CACA 049586	ENXCO Development Inc	5000 Executive Pkwy Ste 140 San Ramon, CA 94583	2,400	Pending	12/07	2nd in line - Brightsource; trough solar farm	11/13/08
CACA 049587	Bull Frog Green Energy LLC	3567 Calle Palmito Carlsbad, CA 92009	12,160	Pending	12/07	Photovoltaic farms	11/13/08
CACA 049811	Nextlight Renewable Power LLC	101 California Street Ste 2450 San Francisco, CA 94111	7,750	Pending	03/08	500MW Solar trough facility	11/13/08
CACA 049882	Enxco Development Inc.	5000 Executive Pkwy Ste 140 San Ramon, CA 94583	0.010	Pending	03/08	Solar and wind metering station	11/13/08
CACA 050105	Power Partners Southwest LLC	--	5,860	Pending	07/08	--	11/13/08

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Pending BLM Applications for Energy Projects Near the Project and Other Reasonably
Foreseeable Future Projects Within Project Vicinity**

Serial #	Applicant or Holder/Billee	Applicant or Holder/Billee Address	Acres	Case Disposition	Date Application Received	Remarks	Update
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Source: BLM LR 2000 Database accessed 4 and 18 November 2008;

¹Projects within 10 miles of the Project Site.

Notes:

- # = number
- N/A = not applicable

For the purposes of this Project, each resource (e.g., soils, noise, visual, water, etc.) was evaluated for cumulative effects on a regional scale in accordance with CEQA and NEPA guidance to gain a better understanding of how the influx of renewable energy project development, as well as other reasonably foreseeable projects, may cumulatively affect particular resources. For instance, the evaluation area was extended to a more regional scale for the purposes of analyzing potential effects on each resource area, rather than using the 1-mile radius (in accordance with CEC CEQA guidance) for identifying reasonably foreseeable future projects. This same regional approach was used when evaluating the resources within the study area. These are further discussed by resource area in Section 5.18.4, Cumulative Effects by Resource.

As described at the end of this section, the best available data were used for this assessment. Information from readily available databases from San Bernardino County, CEC, BLM, and other agencies involved in regional development was gathered and reviewed as part of this assessment.

While a regional cumulative effect review was conducted per resource area (as further discussed in Section 5.18.4, Cumulative Effects by Resource), a boundary needed to be included when considering reasonably foreseeable future projects. As discussed above, although there are hundreds of projects foreseen within the larger CDCA planning region, those within the vicinity of the Solar One were considered for the purposes of this evaluation. This method of comparison was used with guidance by both the CEC and BLM. Within this radius surrounding the Solar One (including linears and ancillary features also considered part of Solar One), present and reasonably foreseeable future projects to be evaluated for cumulative effects are to include, but are not limited to, the following:

- Projects currently under development or having filed a developmental permit through San Bernardino County within the Project vicinity.
- BLM ROW permits filed within the Solar One Project vicinity.
- Projects known to occur in the future (such as the approximately 65-mile transmission line upgrade performed by SCE, the expansion of the Pisgah Substation, and the SES Solar Three Project to be located adjacent to the Solar One Project).

No additional projects under the jurisdiction of San Bernardino County within the Solar One vicinity were identified through conversations with San Bernardino County staff and using their permitting data base.

The projects with the greatest potential to substantially contribute to cumulative impacts are the SES Solar Three Project, the 65-mile transmission line upgrades, and the expansion of the Pisgah Substation. This is primarily because of the proximity of the sites as well as their relationship with the Solar One Project.

Because the transmission line upgrades would be performed within mostly an existing right-of-way and adjacent to multiple existing transmission lines, impacts associated from transmission line upgrades are anticipated to be less than significant. Given the nature of transmission line construction and the use of existing access roads in many cases, it should be possible to avoid or substantially minimize most footprint-related impacts. Further, the length of the transmission line prevents direct cumulative impacts with the Project, as the majority of the construction and operation potential impacts would be far from the Solar One Site. Potential impacts may be as far away from the Solar One site as 65 miles, thus reducing cumulative impacts on most resource areas. The Pisgah Substation would be expanded in addition to the transmission line upgrades. The expansion would occupy a much larger footprint located to the east of the existing Pisgah Substation. The construction schedule of the expansion is currently unknown.

The Solar Three project would be located immediately to the west of the Solar One site. The Project would include the construction and operation of a 550MW solar field using the same SunCatcher Technology as this Solar One Project. An additional transmission interconnect line would be built parallel to the proposed transmission interconnect line for the Solar One Project to tie into the Pisgah Substation. Similar to Solar One, Solar Three will obtain water through an on-site well. Construction methods would be identical to Solar One. The Solar Three Project Site is identified on Figure 5.18-2. As with this Project, the siting of Solar Three was performed to avoid or minimize potential impacts. Inherently, this reduces potential cumulative impacts. Because of the proximity of the two sites, a substantial portion of the environmental impact analysis of Solar One should apply to Solar Three.

Twentynine Palms military base, as required by the 1958 Engle Act, filed an application requesting the Secretary of the Interior to process a proposed withdrawal of public lands for military training and exercises involving the Marine Corps Air Ground Combat Center at Twentynine Palms. The proposal seeks to withdraw approximately 366,000 acres of federal public land and, if eventually acquired, approximately 72,000 acres of non-federally owned property within the proposed withdrawal area. A notice published September 15, 2008 segregated the public lands involved for two years, making them unavailable for settlement, sale, and location of claims under the mining laws. However, the lands remain open to public access and recreation use. Should the withdrawal be accepted, the incremental loss of additional acres would be negligible as it is only 4% of the land needed for the expansion.

5.18.2.2 *Incomplete and Unavailable Information*

The CEQ guidelines require that:

“When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking (40 CFR 1502.22).”

In the event there is relevant information, but “the overall costs of obtaining it are exorbitant or the means to obtain it are not known” (40 CFR 1502.22), the regulations instruct that the following items should be included:

- a statement that such information is unavailable,
- a statement of the relevance of such information to evaluate reasonably foreseeable significant adverse effects,
- a summary of existing information that is relevant to evaluating the adverse effects, and
- the agency’s evaluation of adverse effects based on generally accepted scientific methods.

Efforts have been made to obtain relevant information, including searching agency databases, review of published reports, conversations with agency staff and direct survey; however, some data gaps still exist related to the unpredictable nature of reasonably foreseeable significant adverse effects (RFFAs) or lack of adequate baseline information for a particular resource.

5.18.3 Cumulative Effects to the CDCA

The CDCA Plan, as amended, states that the entire CDCA should be treated as a contiguous entity. Thus, for the purposes of this analysis, a top-level analysis has been prepared to address potential cumulative impacts on the CDCA from Solar One as well as other past, present, and reasonably foreseeable future actions.

A large concentration of energy projects in the CDCA is located in the vicinity of the Solar One site, as shown in figures 5.18-1 and 5.18-2. As was discussed earlier, a programmatic EIS is currently being prepared by the BLM to address, among other issues, cumulative impacts to resources from the large scale solar power plants that are being proposed within the CDCA.

Should all of the proposed projects reach development, many resource areas within the CDCA are likely to be significantly impacted. The potential impacts would largely result from the amount of acreage that would change from primarily open space or recreational use to industrial development. Further, impacts resulting from this development, increase in traffic, emissions, noise, etc., could occur and may or may not be significant. However, it is not anticipated that all, or even most, of these proposed projects will be developed. Further, as was discussed earlier, many of the proposed projects may be developed after the Solar One Project. Hence, the Solar One Project would be included in their environmental baseline and cumulative effects would need to be addressed by these proposed projects.

A major result of Solar One would be the elimination of other potential uses on the BLM-administered public lands (e.g., recreation, travel, etc.). Existing designated open routes would be terminated at the Project Site boundary, and would not be available for public use. The 2003 Western Colorado Desert Routes of Travel Designations Plan Amendment and Environmental Assessment (EA) (BLM 2003b) established site-specific route designations based on the CDCA Plan. The CDCA Plan Amendment updated previous route designations and existing routes on approximately 475,000 acres with limited use of OHVs and approximately 2,320 miles of OHV routes in San Bernardino County. The approved plan amendment creates a route network that balances the need to conserve natural and cultural resources while providing for OHV recreational opportunities and other access needs throughout the Project Area.

The Project Site is within the West Mojave Plan area of the CDCA. The purpose of the 2004 West Mojave Plan (BLM 2004), CDCA Plan Amendment is to develop management strategies for the desert tortoise, Mojave ground squirrel, and over 100 other sensitive plants and animals that would conserve those species throughout the western Mojave Desert, while at the same time establishing a streamlined program for compliance with the regulatory requirements of Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA).

5.18.4 Cumulative Effects by Resource

5.18.4.1 Air Quality

Air pollutant emissions in the form of dust generated by exhaust from equipment and vehicles would occur during construction of the Project. Because a large area would be disturbed, emissions during this phase of the Project could approach “significance;” however, these emissions would be short term and would be quickly reduced as the construction phase of the Project is completed. During the operation and maintenance of the Project, emissions of air pollutants would come from vehicles (Ford F-150 pickups or the equivalent) moving about the site to conduct maintenance and cleaning of the solar collectors (dust and exhaust emissions), and from the periodic testing of three diesel emergency generator engines and three diesel fire water pump engine drivers that would be spread across the site. Because these are all intermittent sources and because the Project would have BMPs in place to reduce emissions, these effects are likely to be not significant.

Diesel exhaust particulate matter is considered to be a toxic air contaminant by the state of California. Therefore, Solar One would be required to conduct an air toxics health risk assessment for the emissions from these diesel engines, as described in Section 5.16, Public Health and Safety. Each engine would only be tested at most a few hours per month; thus, the expected health risks calculated for these emissions would be well below the significance thresholds for carcinogenic and non-carcinogenic effects on human health.

Past and present activities within the region that have contributed to effects on air quality include other construction projects (e.g., commercial and residential developments involving multiple acres), infrastructure improvements (i.e., highway construction), and OHV use. Each of these activities is expected to continue in the future. The combination of past, present, and future activities are likely to contribute to increased particulates and emissions within the Project Area. Although some cumulative effects, especially those from the adjacent Solar Three site, on air quality are expected during the construction phase of Solar One, these effects would be temporary and are anticipated to be negligible. Emissions would be substantially reduced during the operation and maintenance phase of Solar One because of the minimal amount of activity and intermittent nature of the activities that would result in lower emissions. Therefore, in the long term, cumulative effects on air quality as a result of the daily Project operations are expected to be minimized.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, air quality may be affected by the dust generated by construction activity. However, potential impacts would be temporary and BMPs and mitigation measures would be applied to both projects.

Operations impacts on the air quality in the Project vicinity is anticipated to be minimized through mitigation and BMPs for both the Solar One and Solar Three projects. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be mitigable to levels less than significant.

Construction impacts from the transmission line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site. Hence, incremental construction impacts are considered to be less than significant.

Operations impacts on air quality from the transmission line are not expected to substantially increase from the existing baseline. Activities with the potential to impact air quality are not expected to increase; therefore, emissions should not increase. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.2 Geologic Hazards and Resources

Construction-related effects to the geologic or mineral resources primarily involve grading operations and operations for foundation support. Past and present construction activities (other than Solar One) within the area have contributed to geological resources effects and these effects are likely to continue as a result of future construction projects that involve soil disturbance. The proposed improvements include excavation of storm water holding ponds and minor grading for building pads, utility trenches, and for drainage of surface water flow. According to the Geotechnical Investigation (Appendix E, Preliminary Geotechnical Report), the Project slopes and temporary construction slopes should be stable. Site development is not anticipated to result in significant adverse effects to geologic or mineral resources. Potentially significant effects by geologic conditions on construction are not anticipated. With implementation of the mitigation measures outlined in Section 5.3, Geologic Hazards and Resources, effects to Project construction by the geologic environment are not expected to be significant.

Considering the combination of past, present, and future activities within the region, cumulative effects to geologic resources that have been identified as a result of long-term Solar One Project operations are anticipated to be negligible. Potential cumulative effects from the Project and reasonably foreseeable future actions include the disturbance of additional geologic resources from additional development in the vicinity. However, as described earlier, it is not anticipated that all proposed projects would be developed.

Cumulative effects of geologic hazards on the Project and ancillary systems, including seismic shaking, are not anticipated. The activities of other potential projects in the area are not cumulatively considerable as they would not affect the seismic shaking or other geologic effects on the Project. With implementation of the mitigation measures outlined in Section 5.3, Geologic Hazards and Resources, effects on Project operations from geologic hazards are expected to be reduced.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of grading and geologic disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. However, site development and operation, of either project, is not expected to significantly impact geologic resources or minerals. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, are anticipated to be less than significant.

Because construction and operation of the transmission line would be performed on previously disturbed area, cumulative impacts on geologic resources are not anticipated.

5.18.4.3 Soils

Past and present activities within the region have contributed to effects on soils, including erosion and disturbance. These activities primarily include residential and commercial development, development of infrastructure (i.e., roads and highways), and OHV use (both on trails and cross-country travel). The potential for reasonably foreseeable future large-scale developments (i.e., involving thousands of acres) is likely to result in long-term effects to soils within the study area as a result of direct land disturbance. The extent and magnitude of effects caused by other future actions (as listed in Tables 5.18-3 through 5.18-5) would depend on mitigation measures employed during their construction.

The direct effects from the Project when considering mitigation are likely to be short term and minor, only lasting for the duration of the construction period. Potential cumulative effects on soils as a result of the Project in combination with past, present, and future actions would include erosion and sediment runoff during construction from the potentially large amount of future development. The mitigation measures described in Section 5.18.4, Mitigation Measures, would be implemented to reduce soil effects from the Solar One Project to a level below significant. An acceptable level of soil erosion, as used herein, is defined as that amount of soil loss that would not affect (i.e., limit) the potential long-term beneficial uses of the soil as a growth medium, or adversely affect water resources because of accelerated erosion and subsequent sedimentation. Because impacts resulting from the Solar One Project are anticipated to be less than significant, the Project will not contribute to cumulative effects of proposed projects in the area.

Although the long-term contribution of the Project is likely to cause minimal effects in the region, the extent and magnitude of the overall cumulative effect is unknown, as the use of mitigation measures for other reasonably foreseeable future projects cannot be determined at this time. Cumulative effects during operation of the Project would be minor and are likely to result in a negligible amount of erosion from infrequent vehicular travel throughout the Project Site.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of soil disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. However, site development and operation, of either project, are not expected to significantly affect soils. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, are anticipated to be less than significant.

Because it is anticipated that construction and operation of the transmission line would be largely performed on previously disturbed area, significant cumulative impacts on soils are not anticipated.

5.18.4.4 Water Resources

Cumulative effects for water resources were evaluated on a surface watershed and groundwater aquifer basis. The total watershed area of the Project is approximately 90 square miles for Phase I and Phase II, which lie within the 200,000-square-mile Great Basin. The Project occupies an insignificant proportion of the total watershed area (less than 0.01 percent) and because on-site effects are less than significant the Project is not expected to result in significant cumulative effects on water resources during construction or operation. Additionally, there will be a less than significant effect on surface water flooding limits and duration in the area because of the relatively limited change in surface topography.

The groundwater basin is reasonably isolated by the Pisgah fault and Cady Mountain Range. A groundwater model for basin drawdown will be provided for the Project. The Project will pump at a daily average rate of 25.8 gpm. The result is 36.2 acre-feet of water per year, which is a minor portion of the amount of water in storage for the Lavic Groundwater basin (recharge for the basin is 300 af/yr). Sources of water for other projects in the area are primarily unknown. However, no significant cumulative effects on groundwater are anticipated as the groundwater basin anticipated to be used is localized.

In relation to other land uses and power generating facilities, the Project water use is significantly lower in comparison based upon per acre and per MW water usage rates as illustrated in Table 5.5-3, Comparison of Water Usage Rates. In terms of power generating facilities, the Project's water use rate is approximately 0.044 acre-feet per year/MW compared to approximately 0.1 acre-feet per year/MW for the next most efficient solar electric generating technology (solar thermal compact linear fresnel reflector system with dry cooling), and 11 acre-feet per year/MW for a conventional coal-fired power generating facility. In terms of land use, the Project's water use rate is approximately 0.004 acre-feet per year per acre (36.2 acre-feet per year over 6,500 acres) compared to average uses of 0.52 acre-feet per year for single family residential, and 1.55 acre-feet per year for general industrial/commercial operations (UCR 2000). Based upon the projected annual water usage rate per acre, it is not anticipated that the Project will significantly increase cumulative effects on water use within San Bernardino County. In addition, the Project Site would be designed to minimize effects on erosion and sedimentation below the Project Site and would, therefore, not be expected to have cumulative effects on the watershed when considered together with other foreseeable potential projects.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of land disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb an additional area of land. However, site development and operation, of either project, is not expected to significantly impact water resources. Impacts to groundwater resources are relatively unknown at this time. As studies are performed and other resources in the area are evaluated, cumulative impacts will be accessed further. However, because the Project's water use is comparatively small, it is not anticipated to significantly incrementally increase cumulative impacts.

Because construction and operation of the transmission line would be performed on mostly previously disturbed area, significant cumulative impacts to water resources are not anticipated.

5.18.4.5 Biological Resources

Potential effects on biological resources are discussed in detail in Section 5.6, Biological Resources. Past and present actions within the region that have affected biological resources through disturbance (e.g., noise), habitat degradation, habitat fragmentation, or potential mortality (e.g., vehicular collisions) include residential and commercial development, OHV use, agricultural activities including the use of pesticides, and highway/roadway construction and non-point source runoff. These activities would continue in the reasonably foreseeable future and are likely to contribute to cumulative effects on biological resources. Cumulative effects on biological resources as a result of past, present, and reasonably foreseeable future actions, in combination with the Project, would mainly result from loss of habitat, and habitat disturbance and degradation. While the contribution of the Project to cumulative effects is anticipated to be minimized through mitigation, the extent and magnitude of potential effects resulting from activities other than the Project are relatively unknown.

However, there are numerous pending BLM solar and wind applications (Figure 5.18-2) located near the Project Area that total approximately 138,600 acres for solar projects and 51,900 acres for wind projects. These solar and wind applications may impact habitat for desert tortoise, Mojave fringed-toed lizard, Nelson's bighorn sheep, small-flowered androstephium, Emory's crucifixion-thorn, and white-margined beardtongue. Several locations for applications are within the ACEC to the southeast of the Project and within occupied bighorn sheep and desert tortoise habitat. Should all of the applications be approved, cumulative effects on biological resources from the pending applications would include significant impacts on wildlife movement east of the Project, potential degradation of bighorn sheep habitat, loss of desert tortoise Designated Critical Habitat, and loss of habitat that supports special status plant species as well as raptor foraging areas. These impacts would cause significant cumulative effects at a regional scale if they are inconsistent with the federally approved West Mojave Plan.

Potential direct effects, including habitat disturbance during construction and mortality due to on-site vehicle use, to the flat-tail horned lizard and its habitat would occur as a result of the Project. Areas not directly used for construction of the SunCatcher clusters would be avoided and other BMPs would be implemented to reduce these potential effects. Disturbance during the construction phase of the Project may result in significant effects on habitat for this species.

Cumulative effects associated with staging and administration areas would be permanent given the disturbance to habitat in the Project Area. When combined with other past, present and reasonably foreseeable future actions, the Project may result in significant effects to vegetation due to disturbance and degradation.

Should all currently proposed projects in the vicinity of the Solar One Site be developed, a very large amount of habitat could be impacted. However, Solar One was sited in order to avoid biologically sensitive areas like the Pisgah ACEC and nearby Designated Wildlife Management Area (DWMA). This action inherently reduces some direct and cumulative effects by preserving biologically important areas. Further, the Applicant may be required to contribute habitat compensation, which will help mitigate potential cumulative effects from the Project.

The temporary access road is located within the I-40 ROW to the southeast of the Project Site; however, this is a temporary impact of approximately 70 acres including a 100-foot buffer for the 30-foot road. No special status species will be affected by the access road; therefore, the

temporary impacts of the access road would not contribute to cumulative effects of the Project or the regional applications.

The Project, in combination with past, present, and reasonably foreseeable projects, has the potential to affect large tracks of land throughout the Project vicinity. However, the BLM, in consultation with the United States Fish and Wildlife Service and the California Department of Fish and Game, have identified areas of biological concern and have designated DWMA and ACECs to avoid significant cumulative impacts to biological resources. The main Project is outside these areas; therefore, reducing its contribution to cumulative effects in the area.

Construction schedules of the Solar One and Solar Three Projects may overlap. In this instance, the amount of land disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. However, site development and operation, of either project, with mitigation, including relocation of required special management status species prior to construction and appropriate habitat compensation, is not expected to significantly impact biological resources. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, are anticipated to be less than significant.

Because it is anticipated that construction and operation of the transmission line would be performed on previously disturbed area, significant cumulative impacts to biological resources are not anticipated.

5.18.4.6 Cultural Resources

As described in detail in Section 5.7, Cultural Resources, the Project has the potential to affect cultural resources within the Areas of Potential Effect (APE).

Direct effects from the Project could result from: vegetation clearing; grading of roads for the Main Services Complex and other structure sites; trenching for pipelines, electrical transmission lines, and drainage diversions; augering for foundations for electrical towers or poles and SunCatchers; and any other earth-moving activity that would disturb buried or previously undisturbed cultural resources such as prehistoric objects or sites, making those objects and their cultural resources unavailable for future scientific investigation. Clearing, grading, and deeper excavations at the Project Site could result in significant adverse effects to cultural resources. In addition, the construction of supporting facilities, such as construction offices, laydown areas, and parking areas, have the potential to cause adverse effects to cultural resources if they involve additional ground disturbance.

Furthermore, past and present actions within the region, including highway/roadway construction, commercial and residential development, and OHV use have resulted in effects on cultural resources. However, the location and engineering of the Project Site has been specifically designed to avoid effects to cultural resources. The modularity of each SunCatcher essentially reduces grading and the method used to install the SunCatchers minimizes ground disturbance.

Because a properly designed and implemented mitigation program will be used, these potential effects would be reduced such that significant effects are avoided. With implementation of mitigation measures, the contribution of the Project is not anticipated to result in long-term cumulative effects.

However, significant effects to cultural resources are possible should all or most of the proposed projects be developed. They represent a large amount of land disturbance which could result in the loss of not only cultural resources on each of the individual sites, but trails and other resources spanning multiple sites could be destroyed. However, it is anticipated that not all projects would be developed and that those that are developed will employ mitigation and BMPs to minimize, or mitigate for impacts on cultural resources.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of land disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. However, site development and operation, of either project, with mitigation, is not expected to significantly impact cultural resources. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, are anticipated to be less than significant.

Because it is anticipated that construction and operation of the transmission line would be largely performed on previously disturbed area, significant cumulative impacts to cultural resources are not anticipated.

5.18.4.7 Paleontological Resources

Paleontological resources, including an undetermined number of fossil remains and unrecorded fossil sites; associated specimen data and corresponding geologic and geographic site data; and the fossil-bearing strata, can be adversely affected by ground disturbance and earth moving associated with construction activities if proper mitigation measures are not employed. Construction-related effects to paleontological resources primarily involve terrain modifications (excavations and drainage diversion measures). Past and present activities within the region including highway/roadway construction, commercial and residential development, and OHV use have resulted in effects to paleontological resources. These activities are expected to continue in the reasonably foreseeable future.

Direct effects from Solar One could result from: vegetation clearing; grading of roads and the Main Services Complex and other structure sites; trenching for pipelines, electrical transmission lines, and drainage diversions; augering for foundations for electrical towers or poles and SunCatchers; and any other earth-moving activity that disturbed or buried previously undisturbed fossiliferous sediments, making those sediments and their paleontologic resources unavailable for future scientific investigation. Clearing, grading, and deeper excavations at the Project Site could result in significant adverse effects to paleontological resources. In addition, the construction of supporting facilities, such as temporary construction offices, laydown areas, and parking areas, have potential to cause adverse effects to paleontological resources if they involve additional ground disturbance.

Similar activities performed during the construction and operation of Solar Three, the transmission line upgrades, and substation expansion further the potential for impacts to paleontological resources. This, combined with actions from other large-scale renewable energy development in the area, may have the potential to cumulatively impact these resources.

However, if a properly designed and implemented mitigation program is used not only during Solar One, but these other projects as well, these potential effects could be reduced such that significant effects are avoided. Assuming mitigation measures are implemented properly, the

contribution of the Project is not likely to result in long-term cumulative effects. The potential effects of other reasonably foreseeable future projects are unknown as mitigation measures for such projects cannot be determined at this time. Further, it is not anticipated that all the proposed projects in the area will be developed.

No effects on paleontological resources are expected to occur from the daily operation of the Project or any of its ancillary facilities. Thus, the contribution of the Project to cumulative effects is expected to be negligible.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of land disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. However, site development and operation, of either project, with mitigation, is not expected to significantly impact paleontological resources. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, are anticipated to be below a level of significance.

Because construction and operation of the transmission line would be performed on previously disturbed area, significant cumulative impacts to paleontological resources are not anticipated.

5.18.4.8 Land Use

The development of the Solar One Project combined with the development of other large-scale proposed wind and solar projects could result in significant cumulative effects to area land use and may represent a shift in predominant land use within the study area.

Currently there are applications for ROWs for solar and wind power facilities in the Project vicinity. The areas proposed for solar or wind power facility ROWs in the vicinity of the Project represent a large area of desert land running through the Mojave Valley. Although there are projects of predominant size and scale proposed within the Project vicinity, there is not enough information available about the projects to anticipate the extent of any significant cumulative effect that would be caused.

If the ROW permits were granted and large-scale solar and wind power facilities were built in these areas, there is the potential for significant impacts to the recreational opportunities and resources of the surrounding BLM lands resulting specifically from the cumulative effects of a succession of intensive development in an area that has historically been left to open space and recreation. Because of the size and scale of Solar One, and the location of Solar One next to I-40, the nature of cumulative effects will be highly related to visual resources (see Section 5.13, Visual Resources). This is a prominent location and the existence of wind and solar power facilities will dominate the character of land use in the area at the foot of the Cady Mountains once the Solar One Project has been built.

Existing projects within the study area are few and unrelated to power generation (i.e., new single-family dwellings and mobile homes). There are no permitted projects in the construction phase that are within the Solar One Project study area that would have a cumulative effect when combined with the Solar One Project. Cumulative impacts on land use are not currently anticipated as a result of the construction, operation, maintenance, or long-term presence of the Solar One Project. However, if other large-scale renewable energy projects are permitted, Solar One would represent a prominent incremental effect on a shift in regional land use. Both

renewable energy generation and certain recreation activities (OHV) are allowable uses on BLM-administered public lands classified as moderate. However, as the large-scale renewable energy projects are developed, the sites will no longer be used for recreation. Thus, should all or a majority of these proposed projects be developed, potential significant impacts to the land use in the vicinity of Solar One may occur. However, as discussed previously, it is not anticipated that this will occur.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of land disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. However, site development and operation, of either project, is not expected to significantly impact land use. Recreational use of both sites is currently minimal. Although OHV use is permitted, the sites are infrequently used as such. The projects are not anticipated to impact surrounding recreation uses. The Cady Mountain WSA is used primarily by hunters, and according to the BLM, only a limited number of hikers use the Pisgah Crater ACEC. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, are anticipated to be below a level of significance.

Because construction and operation of the transmission line would be performed on previously disturbed area, cumulative impacts to land use are not anticipated.

5.18.4.9 Socioeconomics

A number of renewable energy projects currently have applications pending with the BLM, including, in some cases, multiple applications filed for the same site. Most of these projects have not advanced to the point where sufficient information is available to evaluate their impact on socioeconomic resources in the Solar One area. In addition, very limited information is available with respect to potential construction schedules and, as a result, it is unknown whether construction of these projects would coincide in time with construction of the proposed Solar One project. Further, the existence of multiple applications for the same site indicates that not all of these projects will be built.

While it is not possible to quantify the impact that these potential projects would have on the local workforce, current unemployment data and the availability of skilled construction labor in the local and regional vicinity of the Project Site suggest that there is a large labor force available to staff the construction and operation of future projects (Tables 5.10-11 and 5.10-12). For example, approximately 1.24 million workers lived within a two-hour commute of the Project Site in 2008, with 110,000 of these workers currently unemployed and looking for work (Table 5.10-11). In addition, the employed portion of this labor force included approximately 68,000 jobs in construction occupations. These data suggest that there would be sufficient construction labor to meet substantial demand in the vicinity of the Project Site.

Contact with the Executive Director of the San Bernardino, Riverside Building Trades Council also indicated that sufficient skilled labor was available in the local area to meet demand for construction labor above and beyond that projected for the proposed Solar One Project. This would be the case under normal market conditions, but is especially the case now given the current economic difficulties and slowdown in construction in the region (Perez 2008). The impact of multiple large projects occurring at the same time, if this were to occur, would likely be to draw workers from a larger daily commuting range (up to two hours each way).

Data on temporary and permanent housing (Tables 5.10-3 and 5.10-4) indicate that there is a large supply of vacant housing and unoccupied motel rooms (based on average occupation rates) available to accommodate workers that may be required to temporarily or permanently relocate to work on other projects that would coincide in time with the proposed Solar One project. An estimated 1,020 housing units were available for rent in Barstow in 2008, with a further 1,050 units available for rent in Victorville (Table 5.10-3). In addition, approximately 900 motel/hotel rooms were identified as, on average, unoccupied and available for rent within a one hour drive of the Project Site in 2008 (Table 5.10-4). If multiple large scale construction projects were to occur at the same time, increased demand for temporary lodging may result in workers staying in motels/hotels or rental housing further from their respective construction sites. As indicated in Table 5.10-4, approximately 4,800 motel/hotel rooms were, on average, unoccupied and available for rent within one to two hours drive from the Project Site in 2008.

Potential impacts associated with the provision of fire protection and emergency response services in the vicinity of the Project Site would need to be evaluated on a case-by-case basis by other project proponents. As discussed in Section 5.10.5, the Applicant for the Solar One project would work with local fire protection and emergency response service providers to address the need for any additional resources during the construction and operation phases of the Project.

Operation of the Solar One Project is expected to have a beneficial effect on the local economy by providing permanent direct employment and also by supporting (indirect and induced) employment in other sectors of the economy through the multiplier effect. Direct, indirect, and induced employment and income, as well as local Project-related expenditures, would provide direct benefits for the local economy, as would sales and property tax revenues. Other new projects in the area may also have similar impacts on the local economy that are likely to be beneficial. This is especially likely to be the case given the current economic slowdown and relatively high unemployment rates in the communities located in the vicinity of the project area (Table 5.10-6). Data on available housing in the vicinity of the project area indicate that there is sufficient available housing for rent or for sale to accommodate the relocation of additional permanent workers, if that were to occur as a result of other projects planned in the area.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, socioeconomics impacts on the area generated by project activity may be large on a cumulative basis. However, many of these potential impacts would be beneficial to the area through increased revenue in sales taxes and increase employment opportunities. Further, because of the large amount of proposed projects in the area, these benefits may be sustained for a relatively lengthy period of time. Further, both the Solar One and Solar Three Projects anticipate hiring local employees, which will reduce the potential for the communities in the area to be adversely affected during construction.

Socioeconomics impacts during Operations, for both projects, also are anticipated to be beneficial. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be significantly beneficial to the local communities. Potential negative cumulative impacts are expected to be mitigated.

Construction impacts from the transmission line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site and the schedules may not coincide. Hence, incremental construction impacts are considered to be less than significant.

Operations socioeconomic impacts on the communities within the project vicinity from the transmission line are not expected to substantially increase from the existing baseline. Activities with the potential to impact socioeconomics are not expected to increase as a result of the upgrades; therefore, potential impacts should not increase. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.10 Traffic and Transportation

Construction of highways and roads, and past, present, and future residential and commercial development have contributed to the existing traffic and transportation conditions within this relatively rural study area. Section 5.11, Traffic and Transportation, provides a more detailed description of these existing conditions as well as more information on potential effects from the Project. Based on the State Highway Level of Service Standard and the Caltrans Guide requirements, the following conditions apply in the determination of significant State highway effects: Desired level of service (LOS) is LOS D. A significant effect occurs when pre-project (Base) LOS A, B, C, and D become LOS E or F with the Project. The LOS criteria for the local circulation system are defined by the San Bernardino County General Plan Circulation and Scenic Highway Element and have set a standard of LOS C. Consequently, LOS A, B, and C are considered acceptable, whereas LOS D, E, and F are unacceptable.

Based on the Solar One Project construction and operations schedule, it is anticipated that there will be minimal overlap of the aforementioned projects. At the worst case condition, considering overlap with the construction of the 65-mile transmission line and expansion of the Pisgah Substation, the trip generation potential of these two projects are minimal and will not contribute to any significant cumulative traffic impact during either construction and operation of the Solar One project. Construction of Solar One and Solar Three are expected to have minimal overlap and operations impact to traffic and transportation are anticipated to be less than significant.

Furthermore, the use of the San Bernardino County recommended 2 percent annualized growth factor to account for future ambient traffic growth and the cumulative traffic in the area is very conservative given the current pace of development in the study area. The result of both Solar One Project construction and operations analysis found no significant cumulative traffic impact.

Based on the above findings it is anticipated that the Solar One Project will not result in cumulative construction and operational Project effects.

Based on traffic projections for the Solar One Project during both construction and operations, and given that the Project is somewhat removed from urban areas where traffic congestion may be higher, the contribution of the Project to cumulative effects on traffic and transportation circulation is not likely to be significant.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, traffic and transportation may be impacted by the increase in vehicles in the area generated by project activity. However, potential impacts would be temporary and mitigation measures would be applied to both projects.

Operations impacts on the traffic and transportation in the Project vicinity is anticipated to be minimized through mitigation and BMPs for both the Solar One and Solar Three projects. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be mitigable to levels less than significant. When considering operation traffic of both projects, no route is expected to fall below an LOS C.

Construction impacts from the transmission line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site and the schedules may not coincide. Hence, incremental construction impacts are considered to be less than significant.

Operations impacts to the traffic and transportation in the vicinity from the transmission line are not expected to substantially increase from the existing baseline. Activities with the potential to impact traffic (maintenance, etc.) are not expected to increase; therefore, traffic impacts should not increase. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.11 Noise

Past and present development (residential, commercial, and highway/roadway infrastructure), vehicles (i.e., from I-40), OHV use, railroad, and flight operations at nearby airports have contributed to the ambient noise conditions throughout the region. These activities are likely to continue in the reasonably foreseeable future and would contribute some noise in the study area. Noise would be produced at the Project Site during its construction and operation.

Should construction schedules of other projects in the vicinity of the Solar One Site overlap, there may be an increase in impacts on ambient noise. When considered cumulatively, these impacts may be considered significant. It cannot be determined at this time what, if any, overlap there will be in construction schedules. Further, potential impacts would be temporary and hence be considered less than significant.

Solar Three would be built to the northwest of the Solar One Project. Because the nearest noise sensitive receiver (SR1) is further away from Solar Three, a significant cumulative increase of noise levels due to Solar Three would not be expected.

The proposed wind power facility to the east of the Solar One Project would potentially have an impact on SR2. The details of noise data from the proposed wind power facility are not available to assess its cumulative noise impacts on SR2 at this time.

For these reasons, and with respect to these other projects in the vicinity, the Solar One Project is not expected to result in significant cumulative effects related to noise during construction, concurrent construction, partial Project operation, and full Project operation when construction is complete.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the noise may have the potential to affect sensitive receivers in the area. This would occur through the increase in construction activities in the area generated by project activity. However, potential impacts would be temporary and mitigation measures would be applied to both projects.

Operations impacts from noise in the Project vicinity is anticipated to be minimized through mitigation and BMPs for both the Solar One and Solar Three projects. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be less than significant.

Impacts from the noise generated during the construction line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site and the schedules may not coincide. Hence, both incremental and direct cumulative construction impacts are considered to be less than significant.

Operations noise impacts on the Project vicinity from the transmission line are not expected to substantially increase from the existing baseline. Activities with the potential to cause noise impacts (maintenance, etc.) are not expected to increase; therefore, noise should not increase. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.12 Visual Resources

Visual resources are discussed in greater detail in Section 5.13, Visual Resources. Visual resources have been affected from past and present actions namely highway/roadway construction and residential and commercial development. The viewshed has already been modified with the presence of existing transmission lines, a substation, and property fencing in the immediate vicinity. As described in Section 5.13, the visual sphere of influence (VSOI) for the Solar One Project represents the area within which the Project could be seen and potentially result in significant effects to visual resources. The furthest distance at which potentially significant visual effects could occur was identified as 5 miles. Given the large scale of the Project, the lack of significant topographic features, and the limited degree of existing landscape modification within the VSOI, potentially significant effects on scenic attractiveness would be expected; however, landscapes inventoried within the VSOI are classified as retaining primarily low to borderline-moderate existing scenic integrity levels. It should be noted that the Project may draw positive visual interest to the area. As one of the first projects of its kind in California, the solar technology has the potential to become a tourist attraction, drawing visitors from the energy industry, environmental community, and government/political figures who seek direct personal experience of progressive renewable energy solutions.

The areas within the VSOI are generally characterized by distant views of mountains and vast open expanses of desert. There is very little nearby development to the east or west, and the few small communities and other sparsely populated areas to the west of the Project Site are not within the VSOI. The size and scale of the Solar One Project in conjunction with any other projects of its type, size, or scale could potentially result in cumulative Project effects on the visual environment.

Currently there are applications for ROWs for solar and wind power facilities in the Solar One Project vicinity. The areas proposed for solar or wind power facility ROWs (see Figure 5.18-2, Pending BLM Applications Near Project Area) in the vicinity of the Project represent a vast swath of land running through the Mojave Valley. Although there are several projects of predominant size and scale proposed within the Project vicinity, there is not enough information available about their visual appearance to determine the extent of any significant cumulative

effect that would be caused. If the ROW permits are granted and large-scale solar and wind power facilities are built, then there is the potential for significant impacts on the visual resources of the area resulting specifically from the cumulative effects of a succession of intensive development in an area that has historically been left to open space and recreation.

Conversely, there may be positive cumulative impacts related to the development of these areas as a regional and/or national center for alternative renewable energy. Positive visual resource effects could draw tourists, students, and researchers to the area, and appeal to residents who are interested in working in the field of renewable energy.

The Solar One Project and other large-scale power projects in the vicinity may result in significant cumulative effects to visual resources in the area. There are several proposed projects within the vicinity that will be clearly visible to each other. However, the impacts on visual resources of these potential power generation projects are unknown at this time, and guidance on this matter is anticipated in a programmatic EIS covering renewable energy projects in the CDCA.

The remaining, non-power related projects within the VSOI include minor construction projects, such as manufactured and mobile home permits, mobile home foundations, carport additions, roof replacements, deck additions, and residential renovations.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of land disturbance is expected to incrementally increase, as the addition of the Solar Three Project will disturb a larger area of land. There is a potential for visual impacts, both positive and negative. While some may see the development detracting from the desert landscape, others may find it visually stimulating. Hence, impacts from both Solar One and Solar Three, when considered cumulatively, have the potential to cause significant cumulative impacts, both positive and negative. The combined projects, however, are unlikely to result in a substantial change in the visual environment relative to either project alone.

Because construction and operation of the transmission line would be performed on previously disturbed area, cumulative impacts on visual resources are not anticipated.

5.18.4.13 Waste Management

Past, present, and future actions within the study area that have affected and that are likely continue to affect waste management include infrastructure development, creation of landfills, agricultural activities, and residential and commercial development. Section 5.14, Waste Management, of this AFC describes the potential effects and the criteria used to analyze effects from the generation, storage, and disposal of hazardous and non-hazardous wastes of this Project in more detail. No “Recognized Environmental Conditions” were identified on the Solar One Project Site and no surrounding properties of potential concern were noted. The Class I and Class III landfills, and soil and water recycling facilities in the area of the Solar One Project have adequate recycling and disposal capacities for wastes originating from the Solar One Project. It is anticipated that these facilities will be able to accommodate waste from a portion of the projects proposed in the vicinity of Solar One; however, it cannot be determined at this time which of these projects will be developed and what their waste generation will be. When considering other past, present, and future projects in the study area, the cumulative effects contributed from the Project Site are not expected to be significant given the best management

practices and proposed management measures that would reduce the potential for effects from waste.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of waste generated is not anticipated to impact waste management in the area. Facilities identified are expected to have enough capacity to hold both the Solar One and Solar Three projects, during this brief potential overlap. Further, potential impacts would be temporary and mitigation measures would be applied to both projects.

Operations impacts from waste disposal in the Project vicinity is anticipated to be minimized through mitigation and best management practices for both the Solar One and Solar Three Projects. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be less than significant.

Impacts from the waste generated during the construction of transmission line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site and the schedules may not coincide. Hence, both incremental and direct cumulative construction impacts are considered to be less than significant.

Operations impacts on waste management in the Project vicinity from the transmission line are not expected to substantially increase from the existing baseline. Activities with the potential to cause waste managements impacts (maintenance, etc.) are not expected to increase; therefore, the amount of waste generated should not increase. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.14 Hazardous Materials Handling

Similar to waste management, past, present, and future actions within the study area that have affected or would affect waste management include infrastructure development, creation of landfills, agricultural activities, and residential and commercial development. Section 5.15, Hazardous Materials Handling, presents a detailed discussion of the potential effects from storage and use of hazardous materials during construction and operational phases of the Project. Design features have been incorporated into the Solar One Project regarding the use of hazardous materials, specifically storage procedures, to keep maximum potential effects below defined thresholds of significance. Based on land uses in the surrounding area and the limited amount and type of hazardous materials to be used as part of the Solar One Project, no significant contribution to cumulative effects from hazardous material handling would be expected from the Project when considering other past, present, and future projects within the study area.

Construction schedules of the Solar One and Solar Three projects may overlap. In this instance, the amount of hazardous materials in the vicinity is anticipated to increase. However, the amounts are expected to be minimal and easily controlled through mitigation and BMPs. Hence, cumulative impacts from hazardous materials for both Solar One and Solar Three are expected to be less than significant. Further, potential impacts would be temporary.

Operations impacts from hazardous materials on site are anticipated to be minimized through mitigation and BMPs for both the Solar One and Solar Three projects. The Off-site Consequences Analysis performed for a hydrogen explosion during the Solar One Project demonstrated that in the worst-case scenario, no off-site impacts would be expected. It is anticipated that the Solar Three Project would have even smaller results because of the reduced amount of hydrogen on-site. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be less than significant.

Impacts from the hazardous materials stored and used during the construction of transmission line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site and the schedules may not coincide. Hence, both incremental and direct cumulative construction impacts are considered to be less than significant.

Operations impacts from hazardous materials in the Project vicinity from the transmission line are not expected to substantially increase from the existing baseline. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.15 Public Health and Safety

The details of the public health analysis are contained in Section 5.16, Public Health and Safety. Past and present activities that may have affected public health and safety within the study area include industrial activities (i.e., nearby mining in Pisgah Crater), construction projects (i.e., diesel engine emissions), and the agricultural activities throughout San Bernardino County (e.g., use of pesticides and herbicides). These activities are likely to continue in the reasonably foreseeable future and may pose minor risks to public health and safety. Sources of uncertainty in Health Risk Assessments (HRA) include emissions estimates, dispersion modeling, exposure characteristics, and extrapolation of toxicity data in animals for application to humans. For this reason, assumptions used in HRAs are designed to provide sufficient health protection to avoid underestimation of health risk to the public. Some sources of uncertainty that are applicable to this HRA are discussed in more detail in Section 5.16, Public Health and Safety.

Because of the relatively short duration of the Project's construction phase (i.e., approximately 4 years), considerable, long-term public health effects are not expected. To ensure worker safety during actual construction, safe work practices would be followed. Project operations were evaluated to determine whether particular substances would be used or generated that may cause adverse health effects if released to the air.

The only stationary Solar One Project operations sources of toxic air contaminants (TAC) emissions are the emergency diesel internal combustion engines that would be used as drivers for the fire water pump and power generator. The fire water pump and power generator would normally be operated for short periods (15 minutes per engine per week) in testing mode to ensure their operability if needed. The PM₁₀ emissions were calculated based on a vendor guaranteed emission factor and are presented in Table 5.16-1, Emission Rates from Normal Testing of the Diesel Emergency Fire Water Pump and Emergency Generator Engines. Detailed emissions calculations can be found in Appendix R, Public Health and Safety Data. Based on the risk assessment methodology described in the foregoing subsections, the maximum incremental cancer risk resulting from the diesel emergency fire water pump and emergency

generator engines particulate emissions was estimated to be 0.01 in 1 million. Cancer risk was not calculated at any of the sensitive receptors because the risk at the point of maximum effect would be well below the significance threshold.

The estimated chronic total hazard index (THI) would be well below the significance criteria of 1. Thus, it is concluded that the Project's emissions from the diesel emergency fire water pump and emergency generator engines would not pose a considerable non-cancer health risk to any population that would potentially be exposed to these emissions.

It is anticipated that the construction of Solar One and Solar Three may coincide. It is not anticipated that construction impacts to public health, when cumulatively considered, would be significant as they would be temporary and minimal.

The added emissions from the Solar Three Project operations are also anticipated to be well below the cancer risk significance threshold. Although operations emissions may occur simultaneously, the effects are anticipated to be minimal and hence, not cumulatively considerable. When considering other past, present, and reasonable foreseeable future activities within the study area, the contribution of the Solar One Project to cumulative effects are expected to be negligible given the direct effects of the Project are likely to be below the level of significance.

Impacts on public health and safety during the construction of transmission line upgrades are anticipated to be relatively short term and minimal. Further, the construction of the transmission line will occur as much as 65 miles away from the Solar One Project Site and the schedules may not coincide. Hence, both incremental and direct cumulative construction impacts are considered to be less than significant.

Operations impacts on public health and safety in the Project vicinity from the transmission line are not expected to substantially increase from the existing baseline. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.4.16 Worker Safety

Section 5.17, Worker Safety, provides detail on safety and health issues, and outlines systems and procedures that would be implemented to provide occupational safety and health protection for Solar One Project workers in accordance with all applicable worker health and safety laws, ordinances, regulations, and standards (LORS). Construction, operation, and maintenance activities may expose workers to the hazards identified in Section 5.17, Worker Safety. Past and present activities that may have effected worker safety within the study area include industrial development (i.e., the Pisgah Mining Area), construction projects (i.e., diesel engine emissions) and the agricultural activities throughout San Bernardino County (e.g., use of pesticides and herbicides). These activities are likely to continue in the reasonably foreseeable future and may pose minor risks to worker safety. Exposure to these hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable personal protective equipment, and compliance with all applicable health and safety LORS. Given the comprehensive health, safety, and fire prevention program and an accident/injury prevention program that would be implemented, the contribution to cumulative effects from the Project on worker safety are not likely to be significant.

Construction schedules of the Solar One and Solar Three projects may overlap. However, potential impacts on worker safety are expected to be minimal and easily controlled through mitigation and BMPs. Hence, cumulative impacts on worker safety for both Solar One and Solar Three are expected to be less than significant.

Operations impacts on worker safety are anticipated to be minimized through mitigation and BMPs for both the Solar One and Solar Three Projects. Because of this, when considered cumulatively, impacts from Solar One and Solar Three are anticipated to be less than significant.

Impacts on worker safety during the construction of transmission line upgrades are anticipated to be relatively short term and minimal. Hence, both incremental and direct cumulative construction impacts are considered to be less than significant.

Operations impacts on worker safety from the transmission line are not expected to substantially increase from the existing baseline. Hence, cumulative impacts from the transmission line upgrades are not anticipated.

5.18.5 Mitigation Measures

Mitigation measures for potential direct, indirect and cumulative effects on each of the following resources are discussed in greater detail in Sections 5.2 through 5.17 of the AFC. For more information on mitigation measures, please refer to those sections. A brief overview of mitigation measures particularly designed to avoid cumulative effects is presented below.

5.18.5.1 Air Quality

Because diesel exhaust particulate matter is considered to be a toxic air contaminant by the state of California, Solar One would be required to conduct an air toxics health risk assessment for the emissions from its diesel engines to comply with Public Health and Safety requirements as described in Section 5.16, Public Health and Safety, of the AFC. To monitor these emissions, each engine would be tested a few hours per month to measure potential carcinogenic and non-carcinogenic effects on human health.

5.18.5.2 Geologic Hazards and Resources

The Project shall be designed in accordance with applicable building codes' seismic design criteria. Seismic design criteria, including site-specific response spectra, are provided in Appendix C, Civil Engineering Design Criteria.

5.18.5.3 Soils

The following mitigation measures would be implemented to reduce potentially significant soils effects to negligible levels.

- Conduct grading operations consistent with the San Bernardino County Grading Ordinance.
- Prepare and implement a detailed Erosion Control Plan before construction, which may be a component of the Storm Water Pollution Prevention Plan (SWPPP) (see Mitigation Measure Water-4).

- Limit soil erosion/dust generation by wetting active construction areas (including roads) with water or by applying dust palliatives (soil binders).
- Stabilize disturbed areas that would not be covered with structures (e.g., buildings) or pavement following grading and/or cut-and-fill operations. Linear utility routes would be allowed to naturally revegetate.
- Clear vegetation only to the extent necessary during construction activities.
- Segregate and stockpile removed topsoil for reuse if practicable.
- Implement drainage control measures and grade Project Site to direct surface water into the retention basins.
- Conduct post-construction monitoring of areas that were disturbed during the construction phase.

5.18.5.4 Water Resources

To prevent violations of surface water quality, groundwater quality, and sediment management standards, the measures noted below would be implemented.

A SWPPP would be developed for the Project and would include best management practices for reducing soil erosion and sedimentation, and protecting water quality.

5.18.5.5 Biological Resources

Mitigation measures for biological resources are discussed in detail in Section 5.6, Biological Resources. In general, the Project would be designed to minimize ground disturbances and resulting environmental effects wherever practicable. The number of roadways would be kept to a minimum, paved roadways would be specifically located to provide main routes for quick access to the site for construction, maintenance, and operations. In addition, access from the main paved roads to the individual SunCatchers would be on unpaved solar field access routes between alternate rows of SunCatchers. Culverts would be installed in a limited number of locations, as necessary, for crossing of natural drainage features. Site layout for the Project would be based on avoiding major drainages and minimizing surface disturbing activities. Additionally, special management habitat areas would be avoided wherever possible. Finally, as discussed above, the Applicant may be required to contribute habitat compensation, which will help mitigate potential cumulative effects from the Project.

5.18.5.6 Cultural Resources

Mitigation measures for cultural resources are described in detail in Section 5.7, Cultural Resources. These measures would reduce potential effects to cultural resources to a less than significant level. Additionally, archaeological monitoring will be conducted during all ground-disturbing activities within the Solar One Project Site because there is a low probability for buried resources in the area. Should a potentially eligible cultural resource be encountered, evaluation of this resource to determine significance is required. The mitigation measures and procedures described below would apply to any cultural resources located within the identified Project Area of Potential Effect (APE). With implementation of the mitigation measures listed below, effects on cultural resources would be reduced to a less than significant level.

Appropriate mitigation measures for the NRHP eligible resources affected by the Project will be detailed in a Historical Resources Treatment Plan referenced in the mitigation measures portion of this section. There is also the possibility that further NRHP eligible cultural resources could be discovered within the APE during the construction phase of this Project, and appropriate mitigation measures (as set forth in this section) will be employed to ensure site avoidance and/or proper treatment of cultural resources.

Mitigation measures include data recovery, avoidance, preconstruction assessment and construction training, archaeological monitoring, Native American monitoring, resource recording and evaluation, and laboratory analysis and curation.

5.18.5.7 Paleontological Resources

Mitigation measures for paleontological resources are discussed in detail in Section 5.8, Paleontological Resources. In general, the mitigation measures proposed below are consistent with SVP standard guidelines for mitigating adverse construction-related effects on paleontological resources (SVP 1995, 1996), and fulfill the requirements of the BLM (1998).

Before construction, a qualified paleontologist should be retained to both design a monitoring and mitigation program and implement the program during all Project-related ground disturbance. The paleontological resource monitoring and mitigation program should include:

- preconstruction coordination,
- construction monitoring,
- emergency discovery procedures,
- sampling and data recovery, if needed,
- preparation, identification, and analysis of the significance of fossil specimens salvaged, if any,
- museum storage of any specimens and data recovered, and
- reporting.

Before the start of construction, the paleontologist should conduct a field survey of exposures of sensitive stratigraphic units that would be disturbed and any fossils discovered should be salvaged. Earth-moving construction activities should be monitored wherever these activities would disturb previously undisturbed sediment. Monitoring would not need to be conducted in areas where sediments have been previously disturbed or in areas where exposed sediments would be buried, but not otherwise disturbed.

Before the start of construction, construction personnel involved with earth-moving activities should be informed: that fossils may be discovered during excavating; that these fossils are protected by laws; on the appearance of common fossils; and, on proper notification procedures. This worker training should be prepared and presented by a qualified paleontologist.

Implementation of these mitigation measures would reduce the potentially significant adverse environmental effect of Project-related ground disturbance and earth-moving on paleontological resources to an insignificant level by allowing for the salvage of fossil remains and associated specimen data and corresponding geologic and geographic site data that otherwise might be lost to earth-moving and to unauthorized fossil collecting.

With a well designed and implemented paleontological resource monitoring and mitigation plan, Project construction could actually result in beneficial effects on paleontological resources through the discovery of fossil remains that would not have been exposed without Project construction and, therefore, would not have been available for study. The salvage of fossil remains as part of Project construction could help answer important questions regarding the geographic distribution, stratigraphic position, and age of fossiliferous sediments in the Project area.

5.18.5.8 Land Use

Mitigation measures designed for other resources as described throughout this section would reduce effects to land use as well. The proposed land use is classified as a Permitted Use subject according to the CDCA Resource Management Plan, and the Solar One Project is compatible with surrounding development; therefore, no mitigation measures relating to land use controls are recommended at this time.

5.18.5.9 Socioeconomics

Although socioeconomic resources within the region may potentially be affected due to a reduction in recreational users and the subsequent reduction in recreational dollars in the area, no mitigation measures are identified for socioeconomic resources.

Several benefits to the socioeconomic environment of San Bernardino County may be realized through the development of the Solar One Project. For this reason, mitigation measures are assumed to be inherent in the nature of the Project. The Project will result in increased jobs, increased revenue from sales tax, and decreased reliance on imported energy.

5.18.5.10 Traffic and Transportation

The State Highway LOS Standard Based on the Caltrans Guide for the Preparation of Traffic Impact Studies, states “Caltrans endeavors to maintain a target LOS at the transition between LOS ‘C’ and LOS ‘D’ on State Highway Facilities. If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.” The LOS criteria for the local circulation system are defined by the San Bernardino County General Plan Circulation and Scenic Highway Element and have set a standard of LOS C. Consequently, LOS A, B, and C are considered acceptable. As a form of mitigation, the Project has been designed in accordance with these standards. No additional mitigation is required.

5.18.5.11 Noise

The San Bernardino County Noise Ordinance sound level limits described in detail in Section 5.12, Noise, would be imposed for the Project to mitigate any potential effects due to Project construction or operations. Specific mitigation measures are described in more detail in Section 5.12. The mitigation measures listed below are recommended.

- Construction noise emissions shall comply with the local LORS regarding hours of construction activity and permitted noise levels affecting adjacent uses.
- All noise-producing Solar One Project equipment and vehicles using internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors, etc.) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.
- All mobile or fixed noise-producing equipment used by the Solar One Project, which is regulated for noise output by a local, state, or federal agency, shall comply with such regulation while in the course of Project activity.
- The use of noise-producing signals, including horns, whistles, electronic alarms, sirens, and bells, will be for safety warning purposes only.
- No construction-related public address, loudspeaker, or music system shall be audible at any adjacent noise-sensitive land use.
- The contractors shall implement a noise complaint process and hotline number for the surrounding community. The Applicant will have the responsibility and authority to receive and resolve noise complaints.

- Within 30 days of Phase I of the Project going on-line, the Applicant shall conduct an occupational noise survey to verify modeled noise levels and identify any additional noise hazard areas in the facility. The survey shall be conducted by a qualified person in accordance with the provisions of Title 8 CCR, Sections 5095-5099 (Article 105) and Title 29, CFR, Section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. Areas above 85dBA that may be accessed by any personnel shall be posted as high-noise-level areas. Hearing protectors shall be furnished and their use required in the posted areas.
- The Applicant shall prepare a report of the survey results and if necessary, identify proposed measures that would be employed to comply with the applicable state and federal regulations. Within 30 days after completing the survey, the Project owner shall submit the noise survey report to the Construction Project Manager. The Applicant shall make the report available to the Occupational Health and Safety Administration and the California Occupational Health and Safety Administration upon request.

5.18.5.12 Visual Resources

Mitigation measures for visual resources are described in detail in Section 5.13, Visual Resources. In general, mitigation measures include the measures listed below.

- Use of native limited-height landscaping materials around facility perimeter to ensure proposed landscaping does not further obstruct views of distant hillsides.
- Suggested off-site planting on adjacent residential properties (if landowner is interested) to assist with screening.
- External lighting design/installation that incorporates commercially available fixture hoods/shielding, with light directed downward or toward the area to be illuminated.
- Light fixtures shall not cause obtrusive spill light beyond the Solar One Project boundary.
- All lighting shall be of minimum necessary brightness consistent with operational safety and security.
- Direct lighting will not illuminate the nighttime sky.

5.18.5.13 Waste Management

The minimal effects anticipated from the generation, storage, and disposal of hazardous and non-hazardous wastes of the Solar One Project would be mitigated by following State and Federal Standards for handling these materials.

5.18.5.14 Hazardous Materials Handling

Design features regarding the use of hazardous materials, specifically storage procedures, have been incorporated into the Solar One Project to keep maximum potential effects below defined thresholds of significance.

5.18.5.15 Public Health and Safety

The criteria pollutant and TAC emissions from Solar One Project's sources, the diesel emergency fire water pump and emergency generator engines, would be mitigated by using clean EPA Tier 3 diesel engines. A discussion of the emission limits pertaining to the Project's emergency diesel engines is included in Section 5.2, Air Quality.

The HRAs presented in the foregoing subsections show that the health effects of the Solar One Project as proposed would be well below the significance thresholds identified in Section 5.16, Public Health and Safety; therefore, no further mitigation of emissions from the Project is required to protect public health.

5.18.5.16 Worker Safety

Environmental consequences related to worker safety are not foreseen at this time; therefore, additional measures beyond those proposed herein are not considered necessary. No significant unavoidable adverse effects to worker safety are anticipated from the Solar One Project. Additional measures may be necessary should the Project change in a manner that affects worker safety.

5.18.6 Compliance with LORS

LORS compliance information is provided for each resource in Sections 5.2 through 5.17. This section addresses compliance related to cumulative effects analysis. The Solar One Project would comply with all applicable LORS from a cumulative perspective.

5.18.6.1 Federal

As described earlier in this section, the analysis of cumulative effects is guided by NEPA of 1969 and CEQ's implementing regulations

5.18.6.2 State

At the state level, CEQA (PRC 21083) and associated CEQA Guidelines (CCR 15130) require that the discussion of cumulative effects be "guided by the standards of practicality and reasonableness" (PRC 21083[b]), and that "the discussion include a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts" (CCR 15130[b][1][A]).

5.18.6.3 Local

There are currently no local compliance standards for analyzing cumulative effects. Table 5.18-4, Summary of LORS – Cumulative Impacts, provides a list of LORS applicable to the Project.

**Table 5.18-4
Summary of LORS – Cumulative Impacts**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Federal Jurisdiction				
NEPA	To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.	Pub. L. 91-190, 42 U.S.C. 4321-4347, 1 January 1970, as amended by Pub. L. 94-52, 3 July 1975, Pub. L. 94-83, 9 August 1975, and Pub. L. 97-258, § 4(b), 13 September 1982	Council on Environmental Quality	James L. Connaughton, Council Chair
State Jurisdiction				
CEQA	Develop and maintain a high-quality environment now and in the future, while the specific goals of CEQA are for California's public agencies to: <ol style="list-style-type: none"> 1. identify the significant environmental effects of their actions; and, either 2. avoid those significant environmental effects, where feasible; or 3. mitigate those significant environmental effects, where feasible. 	Chapter 4.5, Streamlined Environmental Review, Article 3	State of California Office of Planning and Research	Cynthia Bryant, Deputy Chief of Staff and Director
Local				
N/A				

Source: National Environmental Policy Act of 1969, 42 USC §4331; Council on Environmental Quality Regulations for Implementing NEPA, 40 CFR 1500; California Environmental Quality Act, California Public Resources Code 21083.

Notes:

- CEQA = California Environmental Quality Act
- LORS = laws, ordinances, regulations, and standards
- N/A = not applicable
- NEPA = National Environmental Policy Act of 1969

5.18.6.4 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permit and/or enforce LORS are shown in Table 5.18-5, Agency Contact List for LORS.

**Table 5.18-5
Agency Contact List for LORS**

	Agency	Contact	Address	Telephone
1	CEQ	Horst Greczmiel, CEQ Associate Director for NEPA Oversight	722 Jackson Place, N.W. Washington, DC 20503	N/A
2	State of California OPR	Cynthia Bryant, Deputy Chief of Staff and Director	1400 Tenth Street Sacramento, CA 95814	N/A
3	Bureau of Land Management	Steven J. Borchard	22835 Calle San Juan De Los Lagos Moreno Valley, CA 92253	951-697-5204
	Bureau of Land Management	Alan Stein	22835 Calle San Juan De Los Lagos Moreno Valley, CA 92553	951-697-5382
	Bureau of Land Management	Gregory P. Miller	22835 Calle San Juan de Los Lagos Moreno Valley, CA 92553	951-697-5216
	Bureau of Land Management	Gregory Thomsen	22835 Calle San Juan De Los Lagos Moreno Valley, CA 92253	951-697-5237
	Bureau of Land Management	Richard Rotte	2601 Barstow Road El Centro, CA 92243	760-337-4420

Source: <http://www.nepa.gov/ntf/contactus.html>; <http://www.opr.ca.gov/>.

Note:

- CEQ = Council on Environmental Quality
- N/A = not applicable
- NEPA = National Environmental Policy Act of 1969
- OPR = Office of Planning and Research

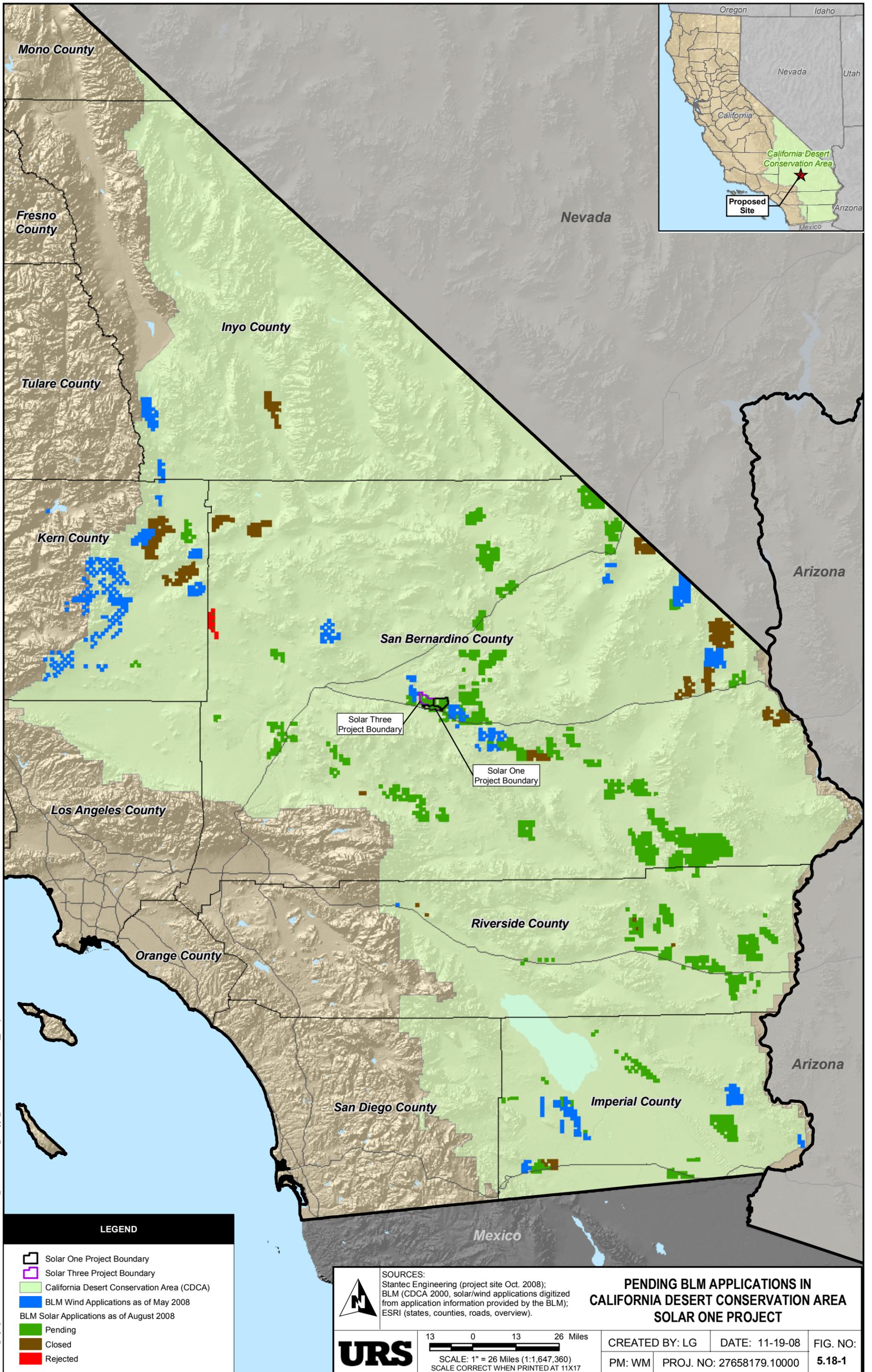
5.18.6.5 Permits Required and Permitting Schedule

No permits for cumulative effects are required for the Project.

5.18.7 References

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- Bureau of Land Management, & Mineral Legacy Rehost 2000 System. <http://www.blm.gov/lr2000/>, accessed 10 April 2008.
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- URS Corporation. 2008. Field work, observations, research, and modeling.
- U.S. Census Bureau, Census 2000 Summary File 1. <http://factfinder.census.gov>

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LEGEND

- Solar One Project Boundary
- Solar Three Project Boundary
- California Desert Conservation Area (CDCA)
- BLM Wind Applications as of May 2008
- BLM Solar Applications as of August 2008
- Pending
- Closed
- Rejected



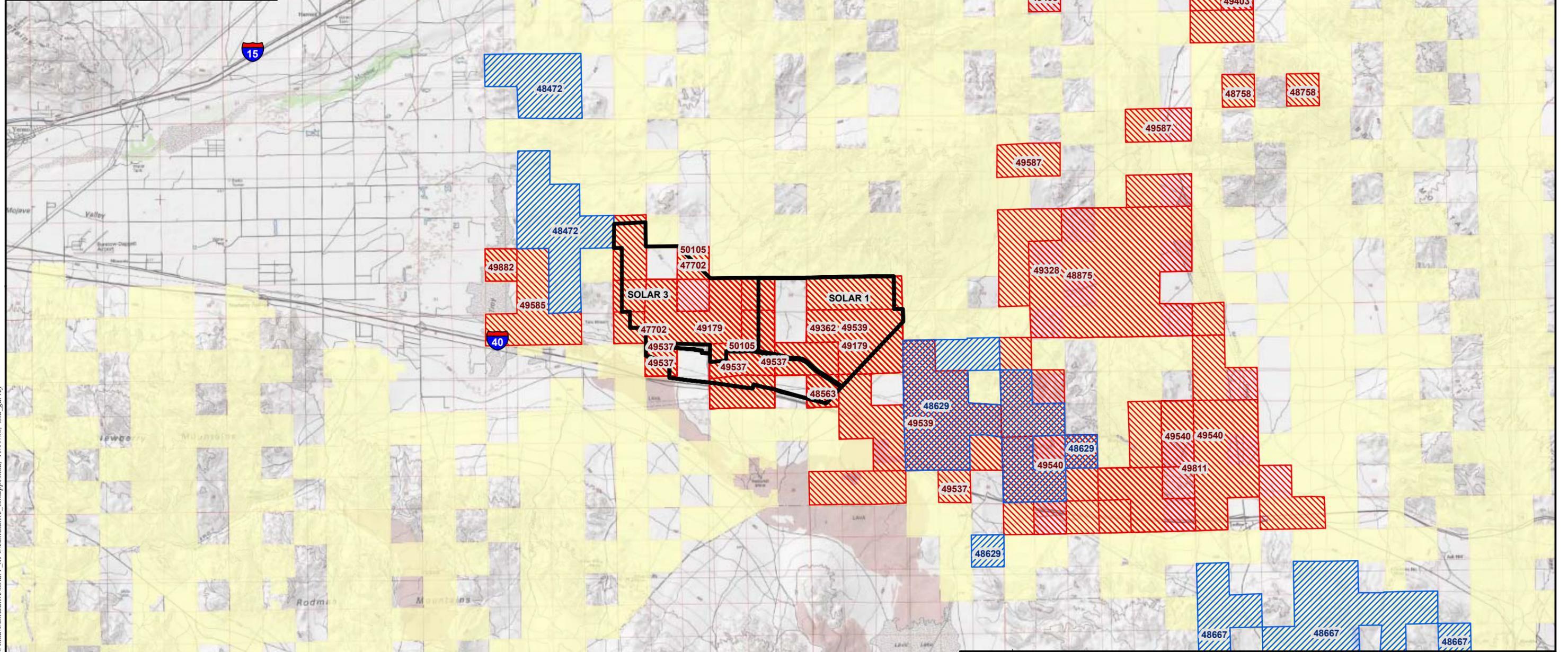
SOURCES:
 Stantec Engineering (project site Oct. 2008);
 BLM (CDCA 2000, solar/wind applications digitized from application information provided by the BLM);
 ESRI (states, counties, roads, overview).

PENDING BLM APPLICATIONS IN CALIFORNIA DESERT CONSERVATION AREA SOLAR ONE PROJECT



13 0 13 26 Miles
 SCALE: 1" = 26 Miles (1:1,647,360)
 SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: LG	DATE: 11-19-08	FIG. NO:
PM: WM	PROJ. NO: 27658179.10000	5.18-1



Path: G:\projects\1577276581\00\mxd\Cumulative\Solar1_AFC\Cumulative_blnapps.mxd, 11/19/08, lisa_garvey

LEGEND

- Project Boundary
- BLM Applications for Wind
- BLM Applications for Solar
- BLM-Administered Public Land

	<p>SOURCES: Stantec Engineering (project site Oct. 2008); BLM (CDCA 2000, solar/wind applications digitized from application information provided by the BLM, land owners 2006); ESRI (overview); USGS 7.5' quads (various dates).</p>		<p>PENDING BLM APPLICATIONS NEAR PROJECT AREA SOLAR ONE PROJECT</p>		
		<p>1.5 0 1.5 3 Miles</p> <p>SCALE: 1" = 3 Miles (1:190,080) SCALE CORRECT WHEN PRINTED AT 11X17</p>	<p>CREATED BY: LG DATE: 11-19-08</p>	<p>FIG. NO: 5.18-2</p>	
		<p>PM: WM PROJ. NO: 27658181.10000</p>			